I index in June
DEC 16 1947
Education

The Journal of Experimental Education

A periodical report of scientific investigations relating to child development, curriculum, learning, teaching, supervision, measurements, statistics, and experimental techniques.

Volume XVI | SEPTEMBER, 1947 | Number 1

TEACHER PERSONNEL RESEARCH

CONTENTS

PAGE

Appraising Teacher Personnel: *David G. Ryans* ---------- 1

A Comparative Study of Students Preparing for Five Selected Professions Including Teaching: *Lawrence Philip Blum* ---------- 31

A Study of the Professional Curriculum Requirements for the Preparation of High School Teachers in the United States: *Kenneth Ralph Doane* ------ 66

p. 91

$5.00 A YEAR | PUBLISHED QUARTERLY | $1.50 A COPY

Published by Dembar Publications, Inc., 114 S. Carroll Street, Madison 3, Wisconsin.
Entered as second-class matter October 17, 1938 at the post office at Madison, Wisconsin under the act of March 3, 1879.

EDITORIAL BOARD

A. S. Barr, Chairman, Professor of Education, University of Wisconsin, Madison 6, Wis.

Arthur T. Jersild, Professor of Education, Teachers College, Columbia University, New York City. Editorially responsible for materials on child welfare, guidance, and development, published each December.

Palmer O. Johnson, Professor of Education, University of Minnesota, Minneapolis, Minnesota. Editorially responsible for materials on measurements, statistics, and methods of experimental research, published each March.

H. H. Remmers, Professor of Educational Psychology, Director Division Educational Reference, Purdue University, Lafayette, Indiana. Editorially responsible for materials on learning, teaching and supervision, published each September.

J. Wayne Wrightstone, Assistant Director, Bureau of Reference, Research and Statistics, Board of Education of the City of New York, 110 Livingston Street, Brooklyn, New York. Editorially responsible for materials on curriculum construction, published each June.

CONTRIBUTING EDITORS

Emmett A. Betts, Research Professor and Director of Reading Clinic, Pennsylvania State College, State College, Pennsylvania.

Gilbert L. Betts, Supervisor of Graduate Research in Education, Colorado State College, Fort Collins, Colorado.

Leo J. Brueckner, Professor of Education, University of Minnesota, Minneapolis, Minnesota.

Oscar K. Buros, Associate Professor of Education, Rutgers University, New Brunswick, New Jersey.

Guy T. Buswell, Professor of Educational Psychology, University of Chicago, Chicago, Illinois.

Harold D. Carter, Associate Professor of Education, University of California, Berkeley 4, California.

Leslie L. Chisholm, Associate Professor of Education, State College of Washington, Pullman, Washington.

Herbert S. Conrad, Technical Consultant, College Entrance Examination Board, Princeton, New Jersey.

Stephen M. Corey, Professor of Educational Psychology, University of Chicago, Chicago, Illinois.

Edward E. Cureton, Secretary–Treasurer, Richardson, Bellows, Henry & Company, Inc., New York 4, New York.

Robert A. Davis, Professor of Education, Director of Bureau of Educational Research, University of Colorado, Boulder, Colorado.

Harl R. Douglass, Director of College of Education, University of Colorado, Boulder, Colorado.

Harold A. Edgerton, Director, Occupational Opportunities Service, Professor of Psychology, Ohio State University, Columbus 10, Ohio.

John C. Flanagan, Professor of Psychology, University of Pittsburgh, Pittsburgh, Pennsylvania.

Carter V. Good, Dean, Teachers College, University of Cincinnati, Cincinnati 21, Ohio.

Robert W. B. Jackson, Assistant Professor of Educational Research; Assistant Director, Department of Educational Research, Ontario College of Education, University of Toronto, Toronto, Canada.

Harold E. Jones, Professor of Psychology and Director, Institute of Child Welfare, University of California, Berkeley 4, California.

Noel Keys, Professor of Education and Lecturer in Human Relations, University of California, Berkeley, California.

D. Welty Lefever, Professor of Education, University of Southern California, Los Angeles, California.

Edward A. Lincoln, Consulting Psychologist, Halifax, Massachusetts.

Irving Lorge, Professor of Education, Executive Officer, Institute of Psychological Research, Teachers College, Columbia University, New York 27, New York.

A. R. Mead, Director of Educational Research, University of Florida, 330 P. K. Yonge Building, Gainesville, Florida.

T. E. Newland, Lt. Comdr., USNR, 2702 Wisconsin Avenue, N. W., Washington 7, D. C.

C. W. Odell, Professor of Education, University of Illinois, Urbana, Illinois.

Willard C. Olson, Professor of Education, Director of Research in Child Development, University of Michigan, Ann Arbor, Michigan.

W. E. Peik, Dean and Professor of Education, University of Minnesota, Minneapolis, Minnesota.

S. L. Pressey, Professor of Educational Psychology, Ohio State University, Columbus, Ohio.

Clarence E. Ragsdale, Professor of Education, University of Wisconsin, Madison, Wisconsin.

William Reitz, Associate Professor of Education, College of Education Examiner, Wayne University, Detroit 2, Michigan.

Henry D. Rinsland, Professor of Education and Director of Educational Research, The University of Oklahoma, Norman, Oklahoma.

Robert T. Rock, Jr., Professor of Psychology, Head of Dept. of Psychology, Graduate School, Fordham University, New York City.

Phillip J. Rulon, Professor of Education, Harvard Graduate School of Education, Cambridge 38, Mass.

Douglas E. Scates, Professor of Education, Duke University, Durham, North Carolina.

Harold Seashore, Director, Test Division, The Psychological Corporation, New York 18, New York.

David Segel, Educational Consultant, Specialist in Tests and Measurements, Federal Security Agency, U. S. Office of Education, Washington, D. C.

Paul W. Terry, Professor of Educational Psychology, University of Alabama. University, Alabama.

Helen Thompson, Associate Attending Psychologist, New York Post–Graduate Hospital, 303 East 20th Street, New York 3, New York.

Robert L. Thorndike, Associate Professor of Education, Teachers College, Columbia University, New York City.

Herbert A. Toops, Professor of Psychology, Ohio State University, Columbus, Ohio.

Maurice E. Troyer, Director, Bureau of School Services, Syracuse University, Syracuse 10, New York.

Helen M. Walker, Professor of Education, Teachers College, Columbia University, New York City.

Beth L. Wellman, Professor of Psychology, Child Welfare Research Station, State University of Iowa, Iowa City, Iowa.

Guy M. Wilson, Professor of Education, Emeritus, Boston University, Boston, Massachusetts.

Paul A. Witty, Professor of Education, Director of Psycho-Educational Clinic, School of Education, Northwestern University, Evanston, Illinois.

Ernest R. Wood, Professor of Education, New York University, New York City.

D. A. Worcester, Chairman Department of Educational Psychology and Measurement, University of Nebraska, Lincoln, Nebraska.

DEMOCRAT PRINTING COMPANY
MADISON, WISCONSIN

Journal of Experimental Education

Volume XVI | September, 1947 | Number 1

APPRAISING TEACHER PERSONNEL

A Report of Activities of the American Council on Education's Committee on Teacher Examinations and an Analysis of the Results of the Eighth Annual Teacher Examination Program

David G. Ryans
National Committee on Teacher Examinations
New York City

INTRODUCTION

To obtain the best possible teachers for the children of our communities is an intrinsic interest and an obligation of education. No professional responsibility is greater than that having to do with the *selection of teacher* personnel.

If effective teachers can be identified and appointed—teachers who are skillful in guiding the learning process, who are sympathetic and understanding in their relationships with children and young people, who know how to motivate children, who recognize the importance and means of developing desirable personal behavior and social attitudes, who are intelligent, and who have a broad background of understanding with respect both to the subject matter they teach and to general cultural materials—the desirable outcomes of education are almost certain to be attained. On the other hand, an educational system may provide excellent resources in the form of buildings, equipment, textbooks, and "paper" curriculums, but if the teaching is of poor quality, the whole program will be ineffective and wasted.

The importance to the teacher's contribution to the educative process probably has never been questioned. Leaders in teacher education, school administrators, and parents, alike, have been aware of differences among teachers and of differences in the quality of teaching. They have urged that teachers be carefully chosen so only the better ones are permitted to assume responsibilities as the counselors and leaders of children. It also has been recognized and pointed out that the teacher selective process should be a continuous one, beginning as early as possible in student life and continuing through teacher training and on into the employment period. This important viewpoint assumes that at each succeeding level the proportion of good teachers will be higher and that of poor teachers correspondingly less. At time of graduation from college, for example, a major share of the poorer teaching prospects should have been eliminated. Following selection for first appointment, the number of teachers of "doubtful" ability should have diminished still further; and after completion of the probationary period, only the really effective teachers should remain.

These important and fundamental viewpoints regarding teacher selection are not new to educational thinking. Lip-service often has been accorded them. And serious efforts have been exerted in some few instances to put into practice the basic principles of teacher selection.

Too often, however, the practical difficulties have proved all but prohibitive of serious and effective teacher selection. Inadequate salaries have introduced a dilemma for the administrator, particularly in smaller communities, discouraging attempts at rigorous selection. In other situations, local pressures (pressures which frequently appeared to operate to promote the interests of incompetent applicants in preference to those who were worthy of consideration) have directed the employment of teachers. Again, the need for military personnel during World War II depleted the college and university classes, interfering with normal teacher production and contributing to a general teacher shortage.

As a result, there are evidences that teacher selection has been operating at a low level. Authorities have pointed out that shockingly large numbers of incompetent teachers are employed in the public schools of the United States. Many of these can not meet certification requirements; many others, although able to qualify from the standpoint of minimum standards, are incapable, because of limitations of personality, intellect, or interest, of assuming responsible pupil guidance and leadership.

It is promising, however, to note the serious renewed interest in teacher selection that has been developing during recent months. Various national and regional educational organizations have reiterated the importance of obtaining the best possible teachers, and have called attention to the urgent need for higher standards for teachers and for improved teacher selection. In a statement formulated by its Planning Committee, and adopted by members of the American Association of School Administrators in attendance at Atlantic City, due cognizance was taken of the fact that a major objective of present-day education must be "the recruitment . . . of outstanding individuals as teachers, administrators, and other professional workers . . ."[1]

Similarly, the Sub-Committee on Teacher Personnel of the North Central Association of Colleges and Secondary Schools has urged that in order to maintain recently achieved advances in professional status: (1) attempts be made to anticipate the needs in teaching areas and to control the number of teachers produced; (2) only the most highly superior individuals be encouraged to complete their preparation for teacher certification; and (3) standards both quantitative and qualitative, be increased to assure a uniformly high quality of instructional services.[2]

It is hoped that such pronouncements will firmly impress upon educators at all the levels the necessity of selecting really able teacher personnel; that the recognition of this need will bear heavily enough upon the professional consciousness, and conscience, of individuals responsible for teacher training and teacher employment to outweigh the influences that often have prevailed to mitigate efforts to provide completely capable and adequate teachers for the children of our schools.

There is, of course, no effortless or easy solution to the problem of teacher selection. Such an important responsibility is necessarily demanding of time, energy, and resources, regardless of the level at which it is practiced. Good teachers can not be identified blindly from records, intuitively from interviews, or automatically by tests or examinations. With the future of hundreds of children depending upon it, teacher selection must be undertaken seriously and with painstaking care. Every possible consideration must be taken into account.[3]

And implied throughout the selection process is a basic dependence upon adequate teacher appraisal. The *appraisal of teacher personnel*, at the undergraduate and graduate levels of teacher training, at time of employment, upon completion of the probationary period, and subsequently for promotion purposes, is an integral part of teacher selection. While the actual "choice" of a teacher, or of a student who will prepare to teach, must always be a responsibility of the individual school system or teacher training institution and must be essentially an evaluative judgment, it is important that such evaluation be based upon information that is the most valid and reliable obtainable. Adequate teacher appraisal is a *sine qua non* of effective teacher selection.

The appraisal of teacher personnel, and the use of teacher appraisals in teacher selection, have been major concerns of the American Council on Education. This report has been prepared to summarize the recent efforts of the American Council on Education and its National Committee on Teacher Examinations in the interest of improved appraisal of teacher personnel.

[1] American Association of School Administrators, *The Platform* (Washington: National Education Association, 1947).

[2] North Central Association of Colleges and Secondary Schools, *Supply of and Demand for Teachers*, Report of Sub-Committee of Teacher Personnel (Chicago: North Central Association, 1947).

[3] In general, responsible teacher selection consists of four major steps: (1) deciding what qualities of the individual (abilities, interests, personality characteristics, etc.) will be considered; (2) obtaining valid information about these qualities; (3) comparing the qualifications of the different individuals; and (4) evaluating the qualifications of the candidates and choosing the best qualified individuals. See:

Ryans, David G. *Comparing the Qualifications of Teachers* (New York: National Committee on Teacher Examinations, 1947).

—— "Notes on Teacher Selection: Sources of Information About Qualifications of the Candidate." *Educational Administration and Supervision*, XXXII (1946), 333–342.

—— *Notes on the Selection of Classroom Teachers: The Interview* (New York: National Committee on Teacher Examinations, 1946).

SCOPE OF THE COMMITTEE'S ACTIVITIES

For a number of years the American Council on Education has taken an active part in the encouragement of research and practices that contribute to the identification of good teaching. In 1939 the Council's National Committee on Teacher Examinations was appointed with this problem in mind and with the immediate purpose of making available to school systems and colleges an examining service which would provide for the comparable measurement of certain abilities and knowledges of prospective teachers. Since its inception the Committee has administered an annual testing program on a nationwide basis and has undertaken to provide various services to the schools and colleges of the United States.

The activities of the National Committee on Teacher Examinations during the period of this report (the fiscal year ending June 30, 1947) fall into two related categories:

(1) Those having to do with the study of, and dissemination of information relating to, various problems and aspects of teacher selection; and

(2) Continuation of the Teacher Examination project, embracing the construction, administration, and scoring of a battery of objective tests, and reporting of the examination results.

These activities will be reviewed in the following discussion.

TEACHER SELECTION ACTIVITIES

1. Services Provided

In keeping with the Committee's intent of encouraging attention to the important problem of teacher selection, extended efforts have been made to be of practical assistance wherever possible to the school systems and colleges of the United States. These services have taken several forms.

An advisory service.—In response to increasing numbers of requests for information regarding the appraisal of teacher qualities and procedures that might be of assistance in the selection of teacher personnel, the National Committee on Teacher Examinations has endeavored to maintain an advisory service and to offer suggestions relating to teacher selection. The staff has made a serious effort to keep informed on practices and techniques that might be useful. Considered attention has been given each inquiry received and an effort has been made to offer impartial assistance regarding available teacher selection procedures that may be applicable to particular situations.

The Selection of Teachers.—In order to provide a medium of exchange for suggestions, practices, and research in the areas of teacher appraisal and teacher selection, the publication of a Bulletin under the title, *The Selection of Teachers,* was begun during the latter part of 1946. Four numbers of this Bulletin, carrying announcements, summary reports, notes, and suggestions, were distributed to school systems and colleges during the year.

Teacher Selection Papers and Reports.—A *Teacher Selection Papers and Reports* series has been inaugurated by the Committee to make available more complete statements and discussions of the problems of teacher selection. Paper No. 6 in this series, *Notes on the Selection of Classroom Teachers: The Interview,* analyzed, summarily, the essentials of the interview in teacher selection and listed suggestions of a practical nature for the improvement of the selection interview. Paper No. 11, *Comparing the Qualifications of Teachers,* suggested methods of preparing "profiles" of teacher personnel to facilitate comparisons and evaluation.

Teacher selection conference.—A regional conference on teacher selection was held by the National Committee on Teacher Examinations in Columbia, South Carolina on November 15–16, 1946. Invited representatives of southern public school systems, State Departments of Education, and institutions of higher learning participated in the conference which included round-table discussion of such questions as: What factors should be considered in selecting students for teacher training? What factors should be considered for selecting teacher personnel for employment? What procedures can be recommended for improving the selection of teacher personnel?

2. Research on Teacher Selection

Research on teacher interests.—Research was begun by the Committee during the fiscal year in the area of teacher interests. This study was undertaken in an effort to better

understand the nature of the interests and preferences characteristic of teachers of professional promise. A preference inventory consisting of slightly over 200 items was published in experimental form and was administered to several hundred experienced teachers and also to a number of teachers in training. A partial analysis of the results has been made. Further analyses, with additional criteria, are now in progress.

Questionnaire on teacher selection.—A questionnaire study having to do with the procedures employed in teacher selection in cities of four different population classes, and procedures recommended by teachers colleges, was conducted in the hope that many school systems and teacher training institutions would have studied the problem and that they might have developed efficacious means of judging and evaluating the abilities of teachers. In passing along such information, and so in encouraging the exchange of experiences and research, it was believed that the way might be opened to more widespread improvement of the teacher selection process.

Study of the responses to the questionnaire failed to reveal any new important practices or procedures. In many instances traditionally unreliable methods were being employed. Some few educators, on the other hand, seemed to be making serious efforts to set up procedures that would enable them to make choices of teachers on sounder bases. The general conclusion reached by the study was that relatively little progress was being made in the area of teacher selection, and that there was much to be accomplished if education were to become truly professional.

Criterion study of teaching.—Preliminary plans were made during the year for a major research project directed at the important matter of determining the characteristics that distinguish between "good" and "poor" teachers. Although "goodness of teaching" undoubtedly varies with the same teacher depending upon such factors as administrative relationships, the community, and the pupils themselves, there seems to be good reason to believe that carefully planned and conducted research might bring to light certain common elements that contribute to success or failure in teaching. It is hoped that facilities may be made available to undertake this study within the coming fiscal year.

EXAMINATION SERVICES[4]

1. The Teacher Examination Program

The National Teacher Examinations consist of a battery of tests measuring the intellectual background and the cultural and professional knowledge of teachers. The Teacher Examination program is conducted annually by the American Council on Education. The examinations are prepared and administered through the Council's National Committee on Teacher Examinations.

Sponsorship of the Teacher Examination project was undertaken by the American Council on Education in 1939 after extended consultation with groups of professional educators concerned with the problem of teacher selection. It was the belief of these groups that a crucial need existed for an examination service which would avoid the costly duplication and uncertainties of locally assembled examinations for teacher candidates, and which would yield valid and reliable measures providing comparability of results from year to year and from one school system or college to another. Such an examination service promised to contribute significantly to professional education by assisting superintendents in the selection of new teachers and by making available to prospective teachers and institutions preparing teachers, comparable objective measurements of knowledge and ability.

Although the interests of the Committee included the whole problem of improving the selection of teachers, its initial efforts were confined to the preparation of the best possible battery of teacher tests. It should be pointed out that the educators who inaugurated this project were well-aware that no battery of tests would make possible a completely objective evaluation of *all factors* important in teacher selection. The immediate purpose of the Committee was, then, to assist in *one phase* of the process of selecting teachers—that of providing comparable examinations of intelligence, cultural background, awareness of current social problems, professional educational information, and mastery of academic subjects that the candidates aspired to teach. Examinations in these

[4] The National Committee on Teacher Examinations and staff wish to acknowledge the generous cooperation of many individuals in colleges and public school systems who assisted in the preparation and administration of the 1947 National Teacher Examinations. Through the active support of the many persons interested in the project, it is hoped that continued improvement and advancement will be realized.

fields constitute an indispensible element in a good teacher-selection program, and should be used along with other equally indispensible elements contributing to the identification of good teaching.

1947 marked the eighth year in which the Teacher Examinations were provided, the first edition of the Teacher Examinations having been administered in March, 1940.

Use of the national teacher examinations.[5] —The National Teacher Examinations are used both in school systems and in colleges and universities as a means of appraising certain of the qualifications of teachers.

At this point it should be noted that the National Committee on Teacher Examinations continuously endeavors to emphasize the fact that it is opposed to the use of examination results as the sole basis of teacher selection. Records of experience and academic background, ratings on various aspects of personality, etc. should be considered in addition to the National Teacher Examination record in the evaluation of a prospective teacher's qualifications.

The National Teacher Examinations are used in school systems primarily as an aid to selection at time of employment. Superintendents and Boards of Education in many communities require teaching applicants to present Teacher Examination records along with other credentials as testimony of their qualifications.

The Teacher Examinations also are administered in connection with teacher education programs both at the undergraduate and graduate levels. The examination report profile is used as a basis for student guidance and self-study of strengths and weaknesses in areas measured by tests. In a growing number of institutions the Teacher Examination battery is used as a comprehensive examination for undergraduates and as a qualifying examination for graduate students.

Construction of the 1947 examinations.— Completely new test materials are prepared for each annual administration of the National Teacher Examinations.[6] In preparing the 1947 Teacher Examinations, every effort was made to assure the representativeness of viewpoints and the up-to-dateness of materials that were included. The Committee gratefully acknowledges the contributions of the following educators who prepared, in their original form, a major portion of the items used in the 1947 Teacher Examination battery:

Dr. Esther Swenson, University of Chicago
Dr. Guy Bond, University of Minnesota
Dr. Lucien B. Kinney, Stanford University
Dr. E. D. Carstater, Bureau of Naval Personnel
Dr. Elizabeth Fuller, University of Minnesota
Dr. Arnold Schneider, St. Cloud State Teachers College
Dr. Frank Finch, University of Illinois
Dr. A. Eason Monroe, Pennsylvania State College
Dr. Ruth Cruikshank (formerly Psychological Corporation)
Dr. Dale B. Harris, University of Minnesota
Dr. Paul Kambly, University of Oregon
Dr. Herbert F. Spitzer, University of Iowa
Dr. William Micheels, University of Minnesota
Dr. Harry Berg, University of New Hampshire
Dr. Warren Findley, University of the Air (formerly New York State Department of Education)
Dr. Rudolf Schaeffer, Cornell University
Dr. Harold King, Culver Military Academy
Dr. M. F. Carpenter, University of Iowa
Dr. Clara Stratemeyer, University of Cincinnati
Mrs. Miriam Bryan (formerly Hasting-on-Hudson Public Schools)
Dr. Paula Vailant, Julliard School of Music
Dr. Wallace Taylor, Albany New York State College for Teachers
Dr. John Haefner, University of Iowa
Dr. Howard Anderson, U. S. Office of Education

The methods employed in the preparation of the 1947 Teacher Examinations followed those used regularly during previous years of the program. Briefly, the procedures involved: (a) *development of outlines* and specifications of examination units in cooperation with authorities in the field; (b) *preparation of*

[5] Ryans, David G. *Use of the National Teacher Examinations in School Systems* (New York: National Committee on Teacher Examinations, 1947).
—— *Use of the National Teacher Examinations in Colleges and Universities* (New York: National Committee on Teacher Examinations, 1947).

[6] Several items taken from the 1947 edition of the Teacher Examinations are reproduced in Appendix B. Item analysis data, both for teachers in training and for teachers with one or more years of experience, are also shown.

test items in accordance with the agreed-upon specifications and outlines; (c) *editing* of the originally prepared test items; (d) *try-out administration* of the test items to determine their difficulty and to detect those that might be weak or ambiguous; (e) *selection and revision of suitable items* for the tentative final forms of the examinations; (f) *criticism* and assistance in editing the tentative final form by authorities in teacher education, heads of departments, supervisors of teaching, and others; and (g) *preparation of the final form* of the examinations based upon the criticisms and suggestions received.

As noted in (*f*) *above*, the examination materials were extensively reviewed and criticized both with respect to the test outline and the items, or questions, making up the tests. Over 150 critics examined the tentative final forms of the tests and made suggestions regarding their difficulty level, wording of the items, etc.

Throughout the construction of the tests, a principal aim was to emphasize the *application* of knowledge rather than highly specific factual information.[7]

Areas sampled by the examinations.—The Teacher Examinations are wide in scope, providing measures of information in four different professional areas, of non-verbal and verbal abilities, of basic English skills, and of general cultural knowledge in three areas. As a result of the breadth of the examination materials each individual has an opportunity to demonstrate the pattern of his abilities and knowledge.

The Common Examination battery is taken by teachers of all levels and subject-matters. The Optional Examinations taken by a particular examinee vary with the subject-matter area in which the individual is prepared to teach.

The following examinations were available for the February 8–15, 1947 administration of the Teacher Examinations.

Common Examinations, which are recommended for all candidates on the theory that admission to the profession in any capacity should be restricted to those having a certain minimum of intelligence, culture, and professional preparation.

Mental Abilities and Basic Skills
- Non-Verbal Reasoning
- Verbal Comprehension
- English Expression

General Culture
- History, Literature, Fine Arts
- Science and Mathematics
- Contemporary Affairs

Professional Information
- Education and Social Policy
- Child Development and Educational Psychology
- Guidance and Individual and Group Analysis
- General Principles and Methods of Teaching

Optional Examinations, (which are examinations to show mastery of the subject matter to be taught).

- Education in the Elementary School
- English Language and Literature
- Social Studies
- Mathematics
- Biological Sciences
- Physical Sciences
- French
- German
- Spanish
- Latin
- Commercial Education
- Industrial Education

Participation in the February 1947 program.—The 1947 National Teacher Examinations were administered in 91 official examining centers on February 8 and February 15. These administration centers were conducted in cooperation with (1) school systems, and (2) colleges and universities engaged in teacher education.

In all, 391 school systems and colleges (in addition to schools and colleges in South Carolina, where the use of the Examinations is statewide) cooperated in the 1947 program.[8]

A total of 8,476 candidates applied to take the 1947 Teacher Examinations at the February administration of the tests.[9]

[7] Ryans, David G. *Notes on Test Construction: A Manual of Basic Principles to be Observed in Preparing Test Materials for the National Teacher Examinations* (New York: National Committee on Teacher Examinations, 1946).

[8] Lists of cooperating school systems and colleges are published for the convenience of candidates who take the examinations.

[9] The candidates included persons who were taking the Teacher Examinations as one of the requirements of their application for appointment in a school system, students of education in colleges and universities, and teachers who were applying to the South Carolina State Department of Education for certification.

Administration, scoring and reporting.—The 1947 National Teacher Examinations were administered in all regular centers on the same dates, February 8 and February 15. Administration of the tests was carried out under the direct supervision of a Local Examiner, acting as a representative of the National Committee. Uniform conditions of administration were maintained in all centers.

Following administration of the Examinations, all materials were returned to the central offices of the Committee for classification and scoring. Each answer sheet was scored by use of the International Test Scoring Machine. The results were checked by an independent scoring procedure.

The original score, or raw score, on each test was the number of correct answers minus ¼ the number of incorrect answers. This is the usual correction for guessing when five choice items are employed.

In order that the Examination results might be readily comparable and that adequate interpretation be facilitated, all raw scores on the tests were converted into *Scaled Scores*. The Scaled Scores provided a *common basis* for the test results. Following conversion from raw score to Scaled Score, a given score on any test was similar in meaning to a corresponding score on any other test of the battery.

It also should be pointed out that the 1947 test results were equated with results of earlier editions of the Examinations so that the Scaled Scores on the 1947 Examinations were comparable with those of any other year.

The Scaled Scores obtained by candidates on the various tests of the battery were recorded and individual results were mailed to each participant during the last week of March. Transcripts of the examination records of candidates were also sent, at the candidate's request, to superintendents of schools and to college officials.

Each candidate's Scaled Scores were reported on a special prepared card, facsimilies of which are reproduced on following page. The Scaled Scores attained were punched into the report card, which had previously been signed by the candidate for identification purposes.

Figure 1 represents the front side of the Report Card as it appeared after the examination scores had been recorded. The candidate's score on each of the tests was printed in the appropriate space along the upper edge of the card.

Figure 2 shows the reverse side of the same candidate's Report Card. Here the punched holes, corresponding to the tens digit of the candidate's Scaled Scores on the tests, are reproduced in columns representing each test. The pattern of punched holes of the several tests provide a profile of the candidate's attainment on the Teacher Examinations.

2. Analysis of the Results of the Teacher Examinations

The usefulness of examination results such as those of the National Teacher Examinations depends to a large extent upon the availability of data making possible comparisons of the scores of a given individual with those of various groups of examinees. The greater the number of such comparisons that may be made, the better an individual may be identified with respect to the abilities tested.

With this in mind, the scores of candidates taking the 1947 National Teacher Examinations, have been classified and analyzed with respect to a number of factors that seemed pertinent. It is recommended that the tables provided in this section, and those appearing in Appendix A, be seriously studied in attempting to evaluate the Teacher Examination scores of any candidate.

Particular attention is called to the separate analyses that have been made for *students* and for *experienced teachers*. As the numbers of candidates in each of these categories have increased the desirability of such a breakdown has become apparent. Although students and experienced teachers differ relatively little on some tests of the battery, fairly consistent differences are found with respect to others. For example, experienced teachers as a group attain somewhat higher scores on the Verbal Comprehension test (reading and vocabulary materials), whereas in Non-Verbal Reasoning the scores of the student group are rather definitely superior. Again, considering the Optional Examinations (tests covering the subject-matter to be taught), there is a tendency for the scores of experienced teachers of secondary school subjects to excel those of the students who are preparing to teach in these areas; but with regard to elementary school materials,

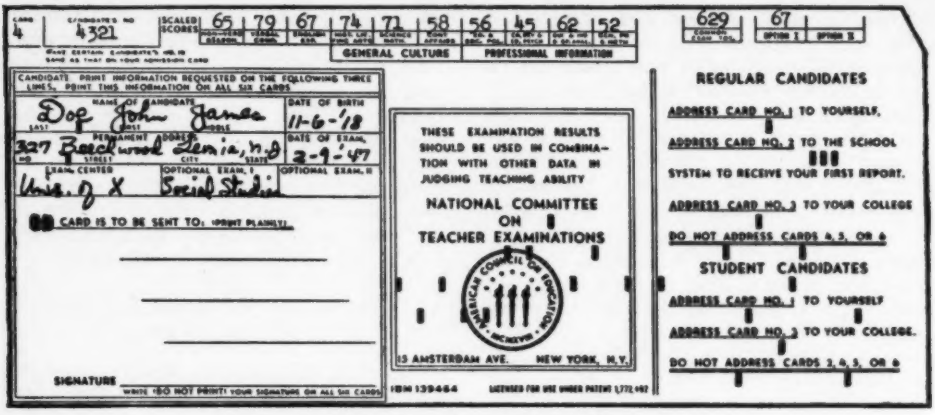

CARD 4
CANDIDATE'S NO. 4321
SCALED SCORES 65 79 67 74 71 58 56 45 62 52
GENERAL CULTURE
PROFESSIONAL INFORMATION
629
67
CANDIDATE: PRINT INFORMATION REQUESTED ON THE FOLLOWING THREE LINES. PRINT THIS INFORMATION ON ALL SIX CARDS
NAME OF CANDIDATE
Doe John James
DATE OF BIRTH 11-6-'18
327 Beech wood Lenia, N.J.
DATE OF EXAM. 3-9-'47
EXAM. CENTER Union, N.J. X
OPTIONAL EXAM. I Social Studies
OPTIONAL EXAM. II
CARD IS TO BE SENT TO: (PRINT PLAINLY)
SIGNATURE
WRITE (DO NOT PRINT) YOUR SIGNATURE ON ALL SIX CARDS
THESE EXAMINATION RESULTS SHOULD BE USED IN COMBINATION WITH OTHER DATA IN JUDGING TEACHING ABILITY
NATIONAL COMMITTEE ON TEACHER EXAMINATIONS
AMERICAN COUNCIL ON EDUCATION
15 AMSTERDAM AVE. NEW YORK, N.Y.
IBM 139464
REGULAR CANDIDATES
ADDRESS CARD NO. 1 TO YOURSELF.
ADDRESS CARD NO. 2 TO THE SCHOOL SYSTEM TO RECEIVE YOUR FIRST REPORT.
ADDRESS CARD NO. 3 TO YOUR COLLEGE
DO NOT ADDRESS CARDS 4, 5, OR 6
STUDENT CANDIDATES
ADDRESS CARD NO. 1 TO YOURSELF
ADDRESS CARD NO. 3 TO YOUR COLLEGE.
DO NOT ADDRESS CARDS 3, 4, 5, OR 6

Fig. 1. 1947 Teacher Examination Report Card.
(Front Side)

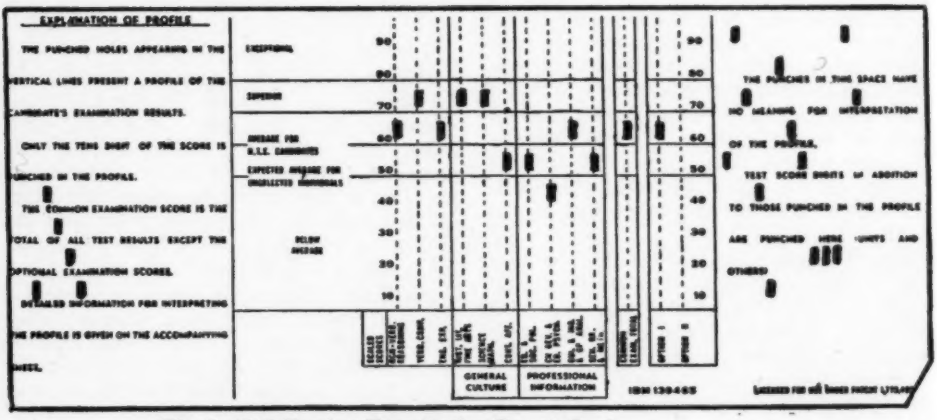

EXPLANATION OF PROFILE
THE PUNCHED HOLES APPEARING IN THE VERTICAL LINES PRESENT A PROFILE OF THE CANDIDATE'S EXAMINATION RESULTS.
ONLY THE TENS DIGIT OF THE SCORE IS PUNCHED IN THE PROFILE.
THE COMMON EXAMINATION SCORE IS THE TOTAL OF ALL TEST RESULTS EXCEPT THE OPTIONAL EXAMINATION SCORES.
DETAILED INFORMATION FOR INTERPRETING THE PROFILE IS GIVEN ON THE ACCOMPANYING SHEET.
EXCEPTIONAL
SUPERIOR
AVERAGE FOR A.I.E. CANDIDATES
EXPECTED AVERAGE FOR UNSELECTED CANDIDATES
BELOW AVERAGE
90
80
70
60
50
40
30
20
10
GENERAL CULTURE
PROFESSIONAL INFORMATION
IBM 139465
THE PUNCHES IN THIS SPACE HAVE NO MEANING FOR INTERPRETATION OF THE PROFILE.
TEST SCORE DIGITS OF ADDITION TO THOSE PUNCHED IN THE PROFILE ARE PUNCHED HERE (UNITS AND OTHERS)

Fig. 2. 1947 Teacher Examination Report Card.
(Back Side)

the scores of students exceed those of the experienced teacher group.[10]

Therefore, although percentile norms are provided in Appendix A for *all* candidates (exclusive of those participating in statewide programs) taking the 1947 Teacher Examinations, separate tables are presented in several instances for (1) *students* and (2) *teachers with* one or more years of regular teaching *experience*.[11]

Percentile norms.—Complete tables showing the percentile equivalents of Scaled Scores on the 1947 National Teacher Examinations are provided in Appendix A. Table XI gives the percentile equivalents of Scaled Scores on

[10] There are several interesting hypotheses that might be advanced to explain these differences (e.g., selectivity resulting from differential "mortality" after training, adequacy of the respective curriculums, etc.). These possibilities will be discussed elsewhere.

[11] Separate item analyses are also made of the examination results of the *student* group and the *experienced* group. The differences often are not large (see Appendix B for sample items), but it has been felt that this was a desirable procedure in order that the functioning of the tests be as thoroughly understood as possible and that they be adapted to the groups taking them.

TABLE I

SCALED SCORE AVERAGES AND STANDARD DEVIATIONS FOR TESTS OF THE 1947 NATIONAL TEACHER EXAMINATIONS

(Based on Results of Regular Administration, February 1947)

Common Examinations	N	Mean	S.D.
Professional Information			
Education As A Social Institution	3426	60.96	10.92
Child Development and Educational Psychology	3426	60.73	11.50
Guidance and Measurement in Education	3426	61.09	11.49
General Principles and Methods of Teaching	3426	60.21	11.10
Mental Abilities and Basic Skills			
Non-Verbal Reasoning	3426	60.88	11.64
Verbal Comprehension	3426	60.88	11.09
English Expression	3426	60.49	10.84
General Culture			
History, Literature, Fine Arts	3426	60.65	10.76
Science and Mathematics	3426	60.78	11.24
Contemporary Affairs	3426	60.52	10.54
Common Examination Total	3426	607.17	83.76

Optional Examinations	N	Mean	S.D.
Education in the Elementary School	878	57.89	10.57
English Language and Literature	402	61.12	9.52
Social Studies	500	61.83	10.05
Mathematics	180	69.22	10.38
Biological Sciences	116	56.83	13.59
Physical Sciences	85	63.01	10.60
French	44	66.32	11.81
German	10	63.10	16.69
Spanish	52	65.38	8.50
Latin	18	73.89	8.41
Industrial Arts Education	30	65.70	10.95
Commercial Education	184	59.23	7.67

TABLE II

SCALED SCORE AVERAGES AND STANDARD DEVIATIONS FOR TESTS OF THE 1947 NATIONAL TEACHER EXAMINATIONS

(Based on Results of Candidates Reporting One or More Years Teaching Experience, February 1947)

Common Examinations	N	Mean	S.D.
Professional Information			
Education As A Social Institution	992	60.18	12.28
Child Development and Educational Psychology	992	58.90	12.15
Guidance and Measurement in Education	992	60.18	12.52
General Principles and Methods of Teaching	992	60.11	12.21
Mental Abilities and Basic Skills			
Non-Verbal Reasoning	992	56.56	10.18
Verbal Comprehension	992	61.56	12.49
English Expression	992	58.59	12.52
General Culture			
History, Literature, Fine Arts	992	59.20	12.10
Science and Mathematics	992	59.90	12.38
Contemporary Affairs	992	60.04	11.37
Common Examination Total	992	595.23	97.61

Optional Examinations	N	Mean	S.D.
Education in the Elementary School	272	53.81	11.91
English Language and Literature	93	63.40	10.76
Social Studies	97	62.65	10.63
Mathematics	42	68.14	13.29
Biological Sciences	27	59.04	14.52
Physical Sciences	24	64.88	12.05
French	11	72.55	10.47
German	3	74.00	2.94
Spanish	14	69.93	5.74
Latin	7	74.14	11.53
Industrial Arts Education	7	67.14	7.95
Commercial Education	32	62.88	8.10

the several tests of the *Common Examination battery*. Table XII shows the percentile equivalents of Scaled Scores for the tests known as *Optional Examinations* (tests covering subject-matter to be taught). The percentile equivalents of "Total Common Examination" scores (added scores of the ten tests comprising the Common Examination battery) are given in Table XIII.

Average scores on the 1947 National Teacher Examinations.—Scaled Score averages and standard deviations for the 1947 National Teacher Examinations are given in Tables I, II, and III. Table I shows the means and standard deviation for the total sample of 3,426 candidates employed in this analysis of the results. This sample includes students, experienced teachers, and individuals who have completed their basic education but have not been employed as teachers.

In Table II are shown the means and standard deviation for the Teacher Examination candidates who have had *one or more full years of regular teaching experience.*

Table III gives the means and standard deviation of *students* (graduating seniors) taking the 1947 Teacher Examinations.

As has already been pointed out, there is a tendency for the student group to show higher averages on most of the tests of the Common Examination battery (Verbal Comprehension being the exception). On the Optional Examinations, the experienced teacher group usually is superior so far as secondary school subjects are concerned, although there is a distinct reversal in the case of the Education in the Elementary School examination. The most likely explanation of these differences seems to be in terms of the factors affecting the selection of the two groups following graduation, although it is also very possible that "use" and "misuse" of materials covered by the various tests might be an important contributing factor.

The most startling of these differences is, of course, that which exists with respect to the examination, "Education in the Elementary School," which is taken by teachers of grades one through eight. One optimistic interpretation of the data is that the elementary school teachers now completing their education are superior, with regard to the abilities and knowledges measured, to those who completed their training earlier and are now members of the "experienced" group. It does not seem likely, however, that this can entirely account for the difference. Other suggested explanations are: (1) that, in practice, less use is made by elementary teachers of materials covered by the Education in the Elementary School examinations as compared with the use by secondary school teachers of the materials covered by the examinations of the secondary field; and (2) that a larger portion of the better informed secondary teachers remain in the teaching profession than is true of the elementary teaching group (i.e., that a lower selection of persons who proposed to be elementary teachers actually became teachers and continued to teach).

Annual variations in Teacher Examination score.—Since the Teacher Examinations are reported in terms of Scaled Scores which have been statistically equated so that the results of any annual edition are comparable with those of any other edition, it is possible to observe variations from year to year in the samples of candidates tested. The averages and standard deviations for the "Common Examination Total" score over an eight-year period, 1940–1947, are shown in Table IV.

Although the differences between the annual averages are not large (the largest difference between the 1940 and the 1944 results, amounting only to approximately one-third of a standard deviation), there does appear to have been a tendency for the samples to deteriorate somewhat during the years when the effects of military demands reflected upon teacher education and teacher recruiting. If the 1947 results are to be taken as an indication of a trend, it would appear that some recovery has been made and that the average might be expected to continue to rise again.

The samples did not differ greatly in variability during the first five years of the administration of the Teacher Examinations, but the standard deviations for 1945, 1946, and 1947 indicate greater homogeneity during the more recent phases of the program.

Length of experience and National Teacher Examination scores.—That the effects of experience play an important part in contributing to changes in one's attitudes, interests, and general behavior is well-known. The extent to which *amount of classroom experience* might be reflected in the examination scores of teachers, therefore, has been of interest. Each year the results of the Teacher Exam-

TABLE III

SCALED SCORE AVERAGES AND STANDARD DEVIATIONS FOR TESTS OF THE 1947 NATIONAL TEACHER EXAMINATIONS

(Based on Results of Student Candidates, February 1947)

Common Examinations	N	Mean	S.D.
Professional Information			
Education As A Social Institution	1953	61.97	9.91
Child Development and Educational Psychology	1953	62.17	10.82
Guidance and Measurement in Education	1953	62.15	10.69
General Principles and Methods of Teaching	1953	61.04	10.08
Mental Abilities and Basic Skills			
Non-Verbal Reasoning	1953	63.76	10.19
Verbal Comprehension	1953	60.76	10.08
English Expression	1953	62.11	9.40
General Culture			
History, Literature, Fine Arts	1953	61.67	9.60
Science and Mathematics	1953	61.65	10.49
Contemporary Affairs	1953	60.59	9.96
Common Examination Total	1953	617.87	72.27

Optional Examinations	N	Mean	S.D.
Education in the Elementary School	534	60.65	8.74
English Language and Literature	246	60.80	8.67
Social Studies	331	61.74	9.77
Mathematics	118	70.71	8.20
Biological Sciences	72	56.17	13.59
Physical Sciences	51	62.25	9.86
French	25	61.68	9.49
German	3	43.00	9.42
Spanish	32	64.12	8.69
Latin	7	74.43	4.89
Industrial Arts Education	18	66.94	11.32
Commercial Education	98	58.52	6.68

TABLE IV

AVERAGES AND STANDARD DEVIATIONS FOR "COMMON EXAMINATION TOTAL" SCORE FOR THE ANNUAL ADMINISTRATION OF THE NATIONAL TEACHER EXAMINATIONS, 1940–1947

	1940	1941	1942	1943	1944	1945	1946	1947
Mean	626.4	615.8	616.5	606.5	591.8	597.1	592.3	607.2
S. D.	93.2	91.5	94.5	92.2	96.5	87.8	88.9	83.8

inations have been studied from the standpoint of length of regular teaching experience, and, invariably, remarkedly small differences in the overall pattern have been found to exist. This same trend is shown in the results of candidates taking the 1947 Teacher Examinations. Although there are differences with respect to the scores of certain tests of the battery, the average "Common Examination Total" score varies relatively little as groups of graduating students and teachers of various amounts of experience were considered. The data are shown in Table V.

Scores on the Professional Information tests also show little consistent change with experience, *except* in the case of the test covering General Principles and Methods of Teaching. It probably is appropriate, and to be expected, that scores on this test would show a tendency to increase with experience in educational situations.

The mental abilities and basic skills of teachers taking the Teacher Examinations *do* appear to vary with length of classroom experience. The Verbal Comprehension scores reveal a trend toward increase with varying amounts of experience. Since the educative process is predominantly a matter of the transmission of knowledge and ideas, and since the medium is so largely verbal (textbooks, discussions, etc.), this would seem a reasonable finding.

The most pronounced decrease in score with amount of experience is noted in the case of the Non-Verbal Reasoning materials. This probably is a case in converse to that of Verbal Comprehension; it seems likely this might be a reflection of a relative disuse of such processes by a majority of teachers as they grow older. Ability with respect to the basic skills involved in the "mechanics and effectiveness of expression" also shows some decline with experience as indicated by the changes in scores on the English Expression test.

Among the areas of general educational background, or general culture, the groups of varying amounts of experience show little consistent change with respect to history, literature, and fine arts, or contemporary affairs. In science and mathematics, however, there seems to be some tendency toward an increase with years of experience.

In considering Table V, as well as the other tables presented in this report, it is important to note that selective factors undoubtedly are operating; that while the data apply to persons taking the National Teacher Examinations, conclusions with respect to teachers in general should not be drawn in the absence of additional collaborative evidence.

In the present instance, for example, it seems quite possible that among teachers with extended experience those who were less-informed and less professionally interested probably would not voluntarily submit to competitive examinations such as the National Teacher Examinations.

Educational level and examination scores. —Table VI shows the average Scaled Scores on tests of the Common Examination battery of the 1947 National Teacher Examination candidates classified according to the highest degree held at the time they took the tests.

In general the results follow the expected pattern and are very similar to those obtained during the seven preceding years of the Teacher Examination program.

The highest group averages shown in Table VI are for those candidates who have had the doctorate conferred upon them. Since only four candidates had attained this educational level, the results obviously are not reliable. It should be noted, however, that this trend is supported by similar studies of the previous editions of the Teacher Examinations.

With respect to Common Examination Total, the average score of the four candidates who hold the doctorate is at approximately the 90th percentile of the 1947 norms; that of Master's degree holders at approximately the 70th percentile; that of holders of the Bachelor's degree at the 43rd percentile; and that of students just completing teacher

TABLE V

AVERAGE SCALED SCORES ON TESTS OF THE COMMON EXAMINATION BATTERY FOR CANDIDATES CLASSIFIED ACCORDING TO NUMBER OF YEARS OF REGULAR TEACHING EXPERIENCE

		Professional Information				Mental Abilities and Basic Skills			General Culture			
Years of Regular Teaching	N	Edu. As A Soc. Inst.	Ch. Dev. & Ed. Psy.	Guid. & Meas.	Gen. Pr. & Meth.	Non-Verb. Reas.	Verb. Comp.	Eng. Exp.	Hist. Lit. Fine Arts	Science & Math.	Cont. Affairs	Common Exam. Total
0	2239	61.02	61.39	61.27	59.89	62.89	60.45	61.36	61.36	60.91	60.80	611.35
1	216	60.75	59.29	59.88	58.61	60.40	61.02	60.17	59.64	59.92	60.92	600.61
2	135	60.71	59.61	61.35	60.04	60.51	60.59	59.20	58.96	59.74	59.59	600.30
3	119	59.73	58.87	59.29	58.39	56.26	60.24	57.74	58.29	58.66	60.12	587.59
4	101	59.85	58.53	59.79	59.81	56.76	59.56	57.62	57.81	61.15	57.86	588.76
5–9	278	61.30	59.99	60.60	61.37	56.00	61.67	58.60	59.26	60.41	59.94	599.14
10–14	155	61.26	59.99	61.50	61.99	55.83	62.19	58.10	59.14	60.92	59.58	600.48
15–19	103	61.37	59.78	62.53	63.22	53.81	64.57	59.27	60.62	61.27	60.11	606.55
20–24	48	61.08	59.15	61.29	65.21	54.27	64.15	59.08	60.60	63.27	60.62	608.73
25–29	26	59.73	56.92	62.69	65.08	54.08	66.65	59.38	59.65	65.54	61.58	611.31
30–34	5	69.20	60.00	62.20	67.60	58.20	66.40	62.40	67.60	65.60	66.80	646.00

TABLE VI

AVERAGE SCALED SCORES OF 1947 NATIONAL TEACHER EXAMINATION CANDIDATES CLASSIFIED ACCORDING TO HIGHEST DEGREE EARNED

		Professional Information				Mental Abilities and Basic Skills			General Culture			
Degree	N	Edu. As A Soc. Inst.	Ch. Dev. & Ed. Psy.	Guid. & Meas.	Gen. Pr. & Meth.	Non-Verb. Reas.	Verb. Comp.	Eng. Exp.	Hist. Lit. Fine Arts	Science & Math.	Cont. Affairs	Common Exam. Total
No Degree	1625	61.44	61.74	61.22	60.24	63.64	60.09	62.01	61.08	60.78	59.80	612.04
Diploma	98	56.10	54.57	52.33	54.26	50.66	55.47	53.48	50.96	53.67	53.14	534.64
Bachelor's Degree	1334	59.85	59.28	60.22	59.34	58.58	60.61	58.83	59.86	60.19	61.02	597.78
Master's Degree	309	65.76	64.14	67.74	66.17	60.31	68.35	63.02	65.93	66.07	65.36	652.84
Doctor's Degree	4	71.25	72.25	72.00	75.25	57.25	79.25	62.75	76.25	81.00	77.50	724.75

TABLE VII

MEAN SCALED SCORES OF 1947 CANDIDATES CLASSIFIED ACCORDING TO PREFERRED TEACHING LEVEL AND SEX

(Candidates Reporting One or More Years of Regular Teaching Experience)

			Professional Information				Mental Abilities and Basic Skills			General Culture			
Teaching Preference	Sex	N	Edu. As A Soc. Inst.	Ch. Dev. & Ed. Psy.	Guid. & Meas.	Gen. Pr. & Meth.	Non-Verb. Reas.	Verb. Comp.	Eng. Exp.	Hist. Lit. Fine Arts	Science & Math.	Cont. Affairs	Common Exam. Total
Elementary School	Men	19	69.00	65.42	69.00	68.89	63.68	67.58	61.84	65.21	70.00	65.79	666.42
	Women	258	55.16	55.62	53.53	56.18	49.94	54.86	53.26	51.90	51.73	53.17	535.37
Junior High School	Men	22	61.64	58.86	66.68	61.50	61.14	64.41	58.59	63.36	65.95	64.59	626.73
	Women	33	57.64	57.82	55.76	56.48	54.76	59.24	58.64	55.64	56.45	57.82	570.24
Senior High School	Men	279	62.02	58.38	62.80	60.76	60.08	64.42	58.44	62.51	67.32	65.70	622.42
	Women	320	61.20	60.65	61.15	61.00	57.66	63.17	62.44	61.15	58.62	59.53	606.58

TABLE VIII

MEAN SCALED SCORES OF 1947 CANDIDATES CLASSIFIED ACCORDING TO PREFERRED TEACHING LEVEL AND SEX

(Student Candidates)

			Professional Information				Mental Abilities and Basic Skills			General Culture			
Teaching Preference	Sex	N	Edu. As A Soc. Inst.	Ch. Dev. & Ed. Psy.	Guid. & Meas.	Gen. Pr. & Meth.	Non-Verb. Reas.	Verb. Comp.	Eng. Exp.	Hist. Lit. Fine Arts	Science & Math.	Cont. Affairs	Common Exam. Total
Elementary School	Men	56	60.55	61.66	65.21	62.38	66.30	61.95	60.82	61.70	68.29	65.25	634.11
	Women	453	60.91	63.99	61.55	62.85	63.22	58.50	61.37	59.49	58.55	57.61	608.03
Junior High School	Men	20	66.60	60.85	64.55	62.55	63.90	62.85	57.90	62.35	65.60	66.25	633.40
	Women	77	63.22	62.90	62.34	61.70	63.19	60.16	63.45	62.51	63.04	60.29	622.79
Senior High School	Men	469	63.68	60.76	63.92	61.10	65.45	62.42	60.35	62.75	68.49	65.23	634.16
	Women	795	61.25	61.95	61.15	60.05	63.64	60.97	64.02	62.42	58.91	59.27	613.63

training at the 50th percentile. Although the percentile equivalents vary slightly, the same trend applies to the results of the Professional Information tests and, in general, to the tests measuring background knowledge in the several areas of General Culture.

With respect to scores on the English Expression test, the differences between the groups are quite small. In Non-Verbal Reasoning there actually is a slight decrease in score with advance in educational level.

The greatest amount of change with educational level occurs with regard to the test measuring verbal comprehension.

The apparent tendency for candidates with the Bachelor's degree to attain somewhat lower scores than graduating seniors is of interest. Although the differences are small, the finding holds for eight of the ten tests (the exceptions being Verbal Comprehension and Contemporary Affairs) and the results are supported by data from similar breakdowns of results during previous years. Whether this is a result of selective factors existing with regard to the experienced teachers who apply to take the Teacher Examinations, of superior ability on the part of individuals now completing their professional training, or of other influences, is impossible to determine.

Examination results classified by teaching level and sex.—Tables VII and VIII show the National Teacher Examination scores of (1) *experienced teachers* and (2) *students* classified according to preferred teaching level and to sex.

In general, the examination scores of secondary school teachers are somewhat superior to those of elementary teachers; and the scores of men are superior to the scores attained by women candidates.

On the test designed to measure general educational background in science and mathematics (General Culture, Part II), on the Contemporary Affairs test, and on the test of non-verbal reasoning ability, the average scores attained by the men are distinctly superior to those of women. The scores of the men also exceed those of women candidates on the Guidance and Measurement test (Professional Information, Part III).

However, with respect to the skills measured by the English Expression test, the reverse is true; with one exception (the group of experienced elementary teachers) the women candidates attain higher average scores than the men. There also is a tendency for the scores of the women to exceed those of men on the test of Child Development and Educational Psychology (Professional Information, Part II).

Sex differences in score on the 1947 Teacher Examinations are much less pronounced with respect to students than is the case with experienced teachers.

Within the experienced teacher group, the 19 men engaged in elementary school work attained the highest average scores on the Examinations. The average scores of this group exceeded those of either men or women in the other groups. At the same time, the women elementary teachers in the experienced group showed the lowest test performance of any of the groups studied.

Teaching preference and National Teacher Examination score.—A variety of selective factors undoubtedly operate in determining the grades or courses a prospective teacher chooses to prepare for and to teach. In the case of the elementary school teacher, for example, these factors would seem to range from a deep and sympathetic interest in young children and their development, at one extreme, to the purely expedient desire to find temporary employment for a few years in a "respectable" field where the personnel turnover is large and employment opportunities are correspondingly abundant. Again specialized abilities, and the resultant interest in subject matter and activities utilizing these abilities, may be a contributing factor. Examples could readily be multiplied. The inevitable results of influences of these sorts and others, are to produce patterns of interest and ability that vary for different groups of teachers. Most school administrators and instructors of college classes are well-aware of such differences and, although recognizing extensive overlapping between groups, take the facts into account in student guidance and in employment.

It is not surprising that the differences between groups of teachers of various courses and levels are reflected in their Teacher Examination scores. Some of these differences in test score are small and unimportant. In other cases, however, they amount to as much as two standard deviations and represent distinctly different patterns of knowledge.

The 1947 National Teacher Examination scores, classified according to type of position named by the candidate as "first teaching preference," are given in Table IX for

TABLE IX

AVERAGE SCALED SCORES ON TESTS OF THE 1947 COMMON EXAMINATION BATTERY CLASSIFIED ACCORDING TO TYPE OF POSITION NAMED AS FIRST TEACHING PREFERENCE

(Candidates Reporting One or More Years of Regular Teaching Experience)

		Professional Information				Mental Abilities and Basic Skills			General Culture			
Type of Position	N	Edu. As A Soc. Inst.	Ch. Dev. & Ed. Psy.	Guid. & Meas.	Gen. Pr. & Meth.	Non-Verb. Reas.	Verb. Comp.	Eng. Exp.	Hist. Lit. Fine Arts	Science & Math.	Cont. Affairs	Common Exam. Total
Elementary School Teacher	265	55.60	55.91	54.05	56.41	50.42	55.39	53.57	52.44	52.36	53.77	539.92
Elementary School Principal	12	67.25	64.83	66.75	71.25	61.17	63.42	60.00	61.08	66.75	60.00	642.50
English Teacher	107	63.93	62.46	64.07	64.35	56.41	69.98	66.48	67.82	60.45	64.11	640.06
Social Studies Teacher	102	64.87	61.64	63.92	63.90	57.36	66.65	60.92	66.94	62.46	68.22	636.88
Mathematics Teacher	52	59.83	60.25	65.23	62.58	66.00	64.87	63.27	60.88	72.87	63.71	639.48
Biological Science Teacher	21	65.62	61.05	59.57	64.05	57.95	60.38	60.95	58.24	66.05	62.33	616.19
Physical Science Teacher	38	61.50	59.47	62.74	62.16	62.61	62.84	56.82	59.45	74.84	62.87	625.29
French Teacher	13	62.23	57.62	63.69	59.62	57.00	73.69	69.77	65.77	63.23	63.00	635.62
German Teacher	4	64.75	69.75	65.00	65.75	60.25	76.00	68.25	74.00	67.00	70.00	680.75
Spanish Teacher	13	58.46	56.77	61.38	58.46	53.85	63.54	59.54	64.69	53.54	63.31	593.54
Latin Teacher	10	63.40	55.60	59.60	59.50	54.00	72.20	66.20	64.40	61.40	62.80	619.10
Commercial Teacher	56	62.20	57.27	62.14	60.14	59.14	61.96	63.98	58.59	58.27	59.12	602.82
Home Economics Teacher	51	55.51	57.49	56.39	54.57	57.04	55.12	54.10	51.12	56.53	53.37	551.24
Industrial Arts Education Teacher	28	58.86	54.00	60.39	57.04	61.93	57.64	52.36	56.50	68.36	63.11	590.18
Music Teacher	53	57.45	57.53	59.47	57.36	59.79	62.04	59.40	62.32	57.08	58.79	591.23
Art Teacher	16	60.62	59.50	60.69	61.25	57.06	66.25	57.19	65.50	60.81	61.75	610.62
Physical Education Teacher	62	59.69	59.37	59.81	57.21	59.97	57.37	55.32	56.37	62.66	60.79	588.56
School Librarian	7	66.86	64.29	60.00	57.14	51.86	58.57	56.43	59.71	54.00	63.57	592.43
Guidance Counselor	16	72.19	69.44	74.00	73.25	61.94	68.81	63.25	64.38	65.31	63.50	676.06
Teacher Special Courses	16	62.00	66.38	65.94	64.88	57.94	63.31	59.31	60.94	60.12	62.94	623.75

TABLE X

AVERAGE SCALED SCORES ON TESTS OF THE 1947 COMMON EXAMINATION BATTERY CLASSIFIED ACCORDING TO TYPE OF POSITION NAMED AS FIRST TEACHING PREFERENCE

(Student Candidates)

		Professional Information				Mental Abilities and Basic Skills			General Culture			
Type of Position	N	Edu. As A Soc. Inst.	Ch. Dev. & Ed. Psy.	Guid. & Meas.	Gen. Pr. & Meth.	Non-Verb. Reas.	Verb. Comp.	Eng. Exp.	Hist. Lit. Fine Arts	Science & Math.	Cont. Affairs	Common Exam. Total
Elementary School Teacher	502	60.80	63.68	61.88	62.67	63.66	58.79	61.30	59.73	59.62	58.42	610.54
Elementary School Principal	7	66.00	67.14	67.00	72.00	56.57	65.29	62.00	60.29	59.43	60.57	636.29
English Teacher	231	63.49	64.42	64.45	62.98	63.53	66.19	66.27	68.34	60.61	62.72	643.01
Social Studies Teacher	325	64.74	63.51	64.03	62.36	61.98	63.13	61.63	65.83	62.01	66.50	635.70
Mathematics Teacher	129	62.55	61.57	65.46	61.58	72.77	62.78	65.36	61.95	74.66	61.98	650.64
Biological Science Teacher	46	61.61	63.41	63.52	60.78	64.80	64.00	61.85	63.02	68.07	59.41	630.48
Physical Science Teacher	68	66.01	62.38	66.09	62.31	67.66	63.06	62.76	62.41	75.46	64.91	653.06
French Teacher	24	60.33	64.04	62.75	60.83	62.54	65.33	67.25	64.29	60.17	59.42	626.96
German Teacher	2	53.50	53.50	65.00	58.00	66.50	61.50	63.50	65.00	69.50	63.00	619.00
Spanish Teacher	30	58.60	58.73	58.03	58.80	59.53	61.07	61.40	61.40	56.70	57.47	591.73
Latin Teacher	10	60.50	61.10	63.70	60.20	65.10	68.50	70.80	69.00	61.80	61.30	642.00
Commercial Teacher	130	59.66	59.65	57.79	57.45	62.90	56.42	62.96	56.83	56.91	57.82	588.40
Home Economics Teacher	78	59.12	61.08	57.14	58.12	63.00	56.27	60.08	56.21	58.10	54.53	583.63
Industrial Arts Education Teacher	31	62.48	54.35	62.10	58.90	67.42	57.77	57.87	58.06	70.32	61.13	610.42
Music Teacher	84	59.45	57.26	59.52	57.71	65.63	57.71	61.79	60.57	56.86	55.54	592.05
Art Teacher	24	57.12	55.12	55.71	57.79	60.58	60.00	57.04	63.88	56.17	57.96	581.38
Physical Education Teacher	113	60.79	58.82	58.82	56.64	63.36	55.45	58.89	55.10	59.60	58.60	586.08
School Librarian	7	53.00	58.29	62.86	56.57	64.29	64.29	66.86	60.14	55.43	59.29	601.00
Guidance Counselor	7	62.14	70.71	78.00	64.00	54.29	66.71	61.86	67.00	57.57	66.43	648.71
Teacher, Special Courses	9	70.00	66.33	63.78	63.00	60.44	60.33	62.11	60.67	60.11	59.56	626.33

candidates reporting one or more years of regular teaching experience and in Table X for students.

The average scores recorded in the two tables are generally similar with respect to the various teaching preference groups. A notable exception, however, is in the case of elementary school teaching. The scores of the *students* who expect to teach in the elementary school are significantly superior to those of the experienced elementary teachers.

In Tables IX and X it is interesting to note that the higher average scores on particular tests of the battery are made by groups which might be expected to do best with such test materials. For example, the group attaining the highest average Scaled Score on the Non-Verbal Reasoning test is that comprised of candidates for positions as mathematics teachers. (The Reasoning test was designed to measure the type of ability involved in reasoning with abstract materials). On the other hand, the group made up of English Language and Literature teachers, and the Latin teacher group, show the highest average scores on the Verbal Comprehension test. Again, the highest average score in the area of Contemporary Affairs is made by Social Studies teachers. On the tests covering Professional Information, the groups made up of principals and of guidance counselors attain the highest scores.

In teacher selection it is of particular importance to consider the examination scores and other attainments of an applicant in relation to data compiled with respect to individuals of similar interests and purposes. From the standpoint of Teacher Examination scores, for example, the examination profile of mathematics teachers is distinctly different from that of teachers of English Language and Literature. Similarly, the pattern of scores of elementary teachers differs from those of the secondary school groups.

With these facts in mind, Figure 3 has been prepared showing the average examination profiles of various subject-matter groups.

It should be pointed out that profiles such as these do not necessarily represent the *desired* patterns of abilities and knowledges. They simply reveal existing differences in the examination scores of various groups. Some such variation, due to concentration of interests and specialization of ability, undoubtedly should be expected. On the other hand there seems to be no reason why efforts should not be made by individuals responsible for student guidance and professional training, to the end of providing more adequate training in areas represented by low points on the profile of a particular subject-matter group.

It is suggested that a college or university may obtain useful results for institutional study by preparing similar examination profiles for their own students.

3. Service Publications

In addition to the examinations constructed and published, and the administrative publications issued in connection with the 1947 National Teacher Examination program, a number of service reports have been prepared by the Committee primarily for interpretative purposes and to assist school superintendents and college personnel in the use of the Teacher Examination results. Such publications issued during 1946–1947 included the following: *Comparative Scores on the National Teacher Examinations, 1940–1945; The National Teacher Examinations: Notes on Their Validity; Teacher Examinations and the South Carolina Certification Program; Notes on Test Construction: A Manual of Basic Principles to be Observed in Preparing Materials for the National Teacher Examinations; National Teacher Examinations: Their Nature and Scope; Use of the National Teacher Examinations in Colleges and Universities.*

4. Teacher Examination Research in 1947

Publication of annual editions of the National Teacher Examinations implies continuous review, research, and study of the testing materials employed in the tests and consideration of their suitability for the purposes of the program. In order that the examinations be made as useful as possible a number of projects were undertaken during 1946–1947. One such study had to do with the nature of the most satisfactory type of items and materials measuring "reasoning" of a non-verbal nature. The results of this research will be incorporated in the Non-Verbal Reasoning test of the Teacher Examination battery. Research also has been carried on in connection with the development of an *interest inventory* for teachers. It is anticipated that such an instrument will be available for use in the 1948 Teacher Examinations.

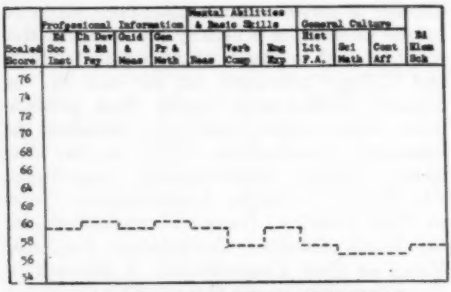
From the beginning of its services the Committee has considered the problem of

validity one of basic importance. Studies of the effectiveness of the Teacher Examinations and of their relationship to classroom performance also has been a continuing activity of the project.

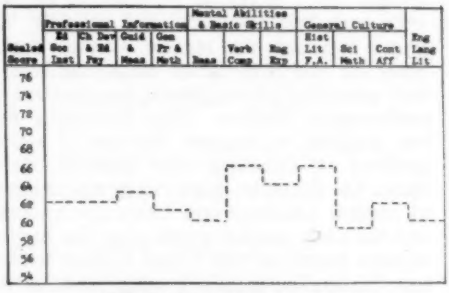
Two follow-up studies of candidates who had taken the National Teacher Examinations were undertaken during the year. Although the statistical analyses are not yet completed it appears that the findings will be comparable with those of similar studies conducted in previous years. (Ratings of the "classroom effectiveness" of teachers and their National Teacher Examination results have been found to correlate to the extent of approximately 0.50. In view of the relative unreliability of the criterion, and the fact that the Teacher Examinations presume to measure only *one phase* of teaching ability, this degree of relationship assumes considerable significance.)

FIGURE 3

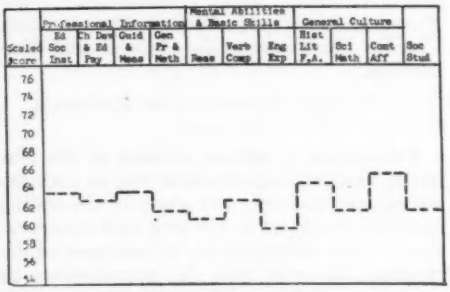
TEACHER EXAMINATION PROFILES SHOWING THE PATTERNS OF ATTAINMENT OF VARIOUS SUBJECT-MATTER GROUPS



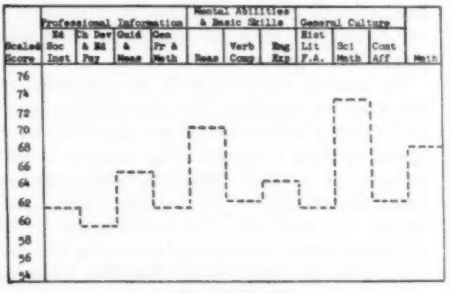
1947 "EDUCATION IN THE ELEMENTARY SCHOOL" CANDIDATES



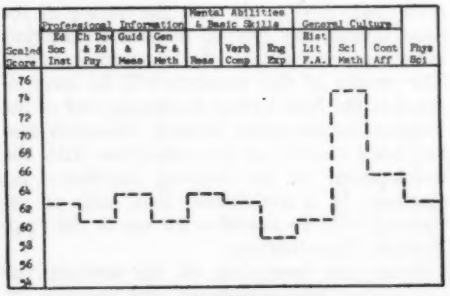
1947 "ENGLISH LANGUAGE AND LITERATURE" CANDIDATES



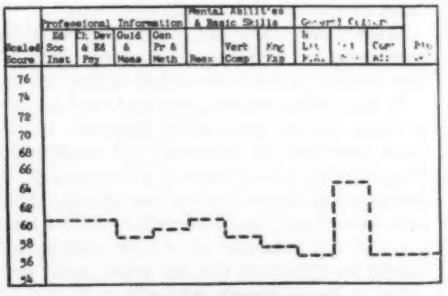
1947 "SOCIAL STUDIES" CANDIDATES



1947 "MATHEMATICS" CANDIDATES



1947 "PHYSICAL SCIENCES" CANDIDATES

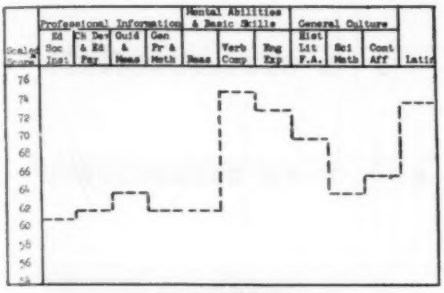


1947 "BIOLOGICAL SCIENCES" CANDIDATES

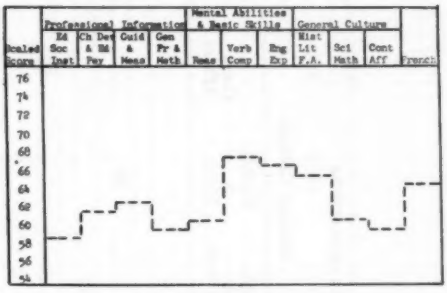
FIGURE 3

TEACHER EXAMINATION PROFILES SHOWING THE PATTERNS OF ATTAINMENT OF VARIOUS SUBJECT-MATTER GROUPS

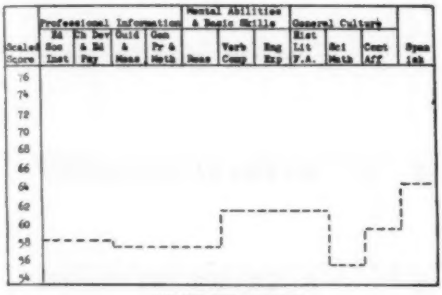
(Continued)



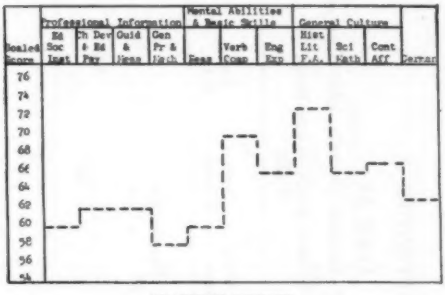
1947 "LATIN" CANDIDATES



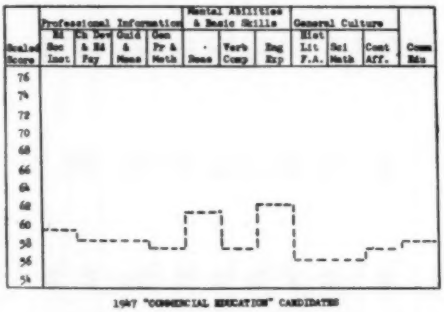
1947 "FRENCH" CANDIDATES



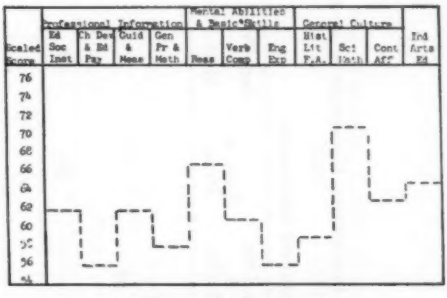
1947 "SPANISH" CANDIDATES



1947 "GERMAN" CANDIDATES



1947 "COMMERCIAL EDUCATION" CANDIDATES



1947 "INDUSTRIAL ARTS EDUCATION" CANDIDATES

Concluding Remarks

The varied activities of the National Committee on Teacher Examinations are directed at a single objective, increasing the *effectiveness of teaching* through the more adequate identification of qualities that contribute to teaching competency and through the practice of increased care in teacher selection at all levels.

In achieving this end, which is shared with other professional groups and individuals, it is the earnest desire of the Committee to cooperate to the fullest possible extent with school administrators, college and university faculties, and educational organizations in research and services that will promote interest in, and understanding of, the problem.

APPENDIX A

TABLE XI

PERCENTILE EQUIVALENTS OF N.T.E. SCALED SCORES: 1947 COMMON EXAMINATIONS

	Professional Information				Mental Abilities and Basic Skills			General Culture			
Scaled Scores	Edu. As A Soc. Inst.	Ch. Dev. & Ed. Psy.	Guid. & Meas.	Gen. Pr. & Meth.	Non-Verb. Reas.	Verb. Comp.	Eng. Exp.	Hist. Lit. Fine Arts	Science & Math.	Cont. Affairs	Scaled Scores
	Percentiles										
99					99						99
98		99							99		98
97						99					97
96						98		99			96
95	99		99	99							95
94										99	94
93											93
92											92
91											91
90											90
89											89
88					98	98			98		88
87											87
86	98	98	98	98			98	98		98	86
85						97					85
84	97			97							84
83		97	97				97	97	97	97	83
82	96				97	96					82
81		96	96			95	96	96	96	96	81
80	93		95		95	93		95	95	95	80
79		93		95	94	92	95	94		94	79
78			93			91	94	93	94	93	78
77	90	91	91	93	93	90		91	93	92	77
76					91	88	92	90	92	90	76
75	87	89	88	89		87	90	89	91	89	75
74					89	86	89	87	89	87	74
73		86	85	86	87	84	87	85	86	85	73
72	83	81	81	84	84	83	84	83	85	84	72
71					81	81		80	82	82	71
70	78	76	76	80	77	78	82	78	80	80	70
69			72		74	76	79	76	76	78	69
68	72	70		75	72	72	73	74	72	73	68

67			66	69	69	68	70	72	70	71	67
66	66	65			65	66	67	69	65	69	66
65			62	64	62	62	64	66	63	66	65
64	60	59	56	61	59	60	61	63	57	63	64
63	54				53	57	58	59	52	59	63
62		52	50	55	50	53	54	55	50	56	62
61	46	44	44	48	47	52	48	51	47	52	61
60					42	47	45	47	41	50	60
59	39	37	37	42	39	45	42	44	38	47	59
58	34		33	37	33	41	37	40	34	39	58
57		31		34	28	36	34	35	32	36	57
56	28		28		26	34	30	31	29	33	56
55	22	25		29	22	30	28	27	26	30	55
54		20	23	24	21	26	23	26	24	24	54
53	18		17	20	19	24	21	20	21	21	53
52		16			16	20	18	18	18	18	52
51	14		13	16	15	16	16	15	16	16	51
50		12		14	13	13	13	12	14	13	50
49	11		10		12	12	11	10	12	11	49
48	9	9		11	10	9	10	8	10	9	48
47			7	9	9	8	8	7		7	47
46	6				8	6	7	6	8	6	46
45		6		7	7	5	6	5	7	5	45
44	5		5		6	4	5	4		4	44
43				5		3	4		5		43
42		4			5		3	3		3	42
41	3			3	4	2			4	2	41
40			3			1		2		1	40
39	2	3			3				3		39
38							2	1			38
37	1			2					2		37
36			2								36
35		2									35
34				1	2		1				34
33									1		33
32			1								32
31		1									31
30											30
29					1						29
28											28
N	3426	3426	3426	3426	3426	3426	3426	3426	3426	3426	N

N.B. If the same percentile value corresponds to more than one Scaled Score, only the percentile corresponding to the highest Scaled Score is printed.

TABLE XII

PERCENTILE EQUIVALENTS OF N.T.E. SCALED SCORES: 1947 OPTIONAL EXAMINATIONS

Scaled Scores	Ed. in Elem. School	English Lang. and Lit.	Social Stud.	Math.	Biol. Sci.	Phys. Sci.	French	German	Spanish	Latin	Ind. Arts Edu.	Comm. Edu.	Scaled Scores
					Percentiles								
99													99
98													98
97				99									97
96													96
95		99											95
94													94
93				98									93
92													92
91													91
90													90
89				97									89
88	99		99		98	98	97						88
87				96									87
86				95	97	97				94			86
85			98	94		95	95						85
84				93									84
83				92						88			83
82		97	97	90			93	90		83			82
81			96	87		94	88				96		81
80	98	96		83	95	92					93		80
79		95	95	79			86			72			79
78	97	94	94	78	94	91		80	98		90		78
77			93	75	92	89			96	55			77
76	95	92	91	71	91			70	92	38	80	98	76
75	94	90	89	68	85	87	79	60	90	33	73	97	75
74	93	89	87	65		85	75		88	27	70	96	74
73	92	86	84	62		84	68	50	86	22			73
72	91	85	82	57	82	80	63		76		60	93	72
71	89	83	80	51	81	77	61	40	67			92	71
70	87	81	76	48	76	71			61		53	91	70
69	85	78	74	44	75	67	54		57		46	88	69
68	82	76	70	40		63			46			84	68
67	79	73	67	36	74	58	50					83	67
66	76	69	64	33	70	55	47		32			79	66

65	72	64	62	30	68	51	40			43	76	65
64	68	62	57	27			36		28	16	71	64
63	65	60	54	24	66	50				11	36	66	63
62	59	55	49	22	62	45			26	5	26	61	62
61	56	50	44	20		42			25		23	59	61
60	52	43	39	16	58	38	31		23			52	60
59	48	39	35	15	56	31	27		21			47	59
58	46	35	31	13	51	30			19			41	58
57	42	30	29	12	49	29			15		20	33	57
56	38	26	26	8	46	25	25	30	13			26	56
55	35	23	23	7	43	22	22				16	23	55
54	32	17	21		41	20						19	54
53	28	15	18	5	38	17	20		9		6	16	53
52	24	12	15	4	37	16	18		7			14	52
51	23	11	13	3	34	15	15		5			11	51
50	20	9	10			12	13					9	50
49	18	8	8	2	31	11	4					8	49
48	15	7	6			8							48
47	14	5	4		28	7		20				7	47
46	12	4			26	3						5	46
45	10	3	3		23	2			3			2	45
44	9				20	1			1				44
43	8	2	2	1	18						3		43
42	7				16								42
41	6	1			13								41
40	5				12								40
39	4		1					10					39
38					6								38
37	3												37
36	2				2								36
35													35
34	1												34
33													33
32													32
31													31
30													30
29													29
28													28
N	878	402	500	180	116	85	44	10	52	18	30	134	N

N.B. When the same percentile value corresponds to more than one Scaled Score, only the percentile corresponding to the highest of the Scaled Scores is printed.

TABLE XIII

PERCENTILE EQUIVALENTS OF N.T.E. SCALED SCORES: 1947 "COMMON EXAMINATION TOTAL" SCORES

Common Examination Total	%ile	Common Examination Total	%ile	Common Examination Total	%ile	Common Examination Total	%ile
789 and above	99	662–663	74	610–611	49	557–558	24
773–788	98	659–661	73	609	48	554–556	23
760–772	97	656–658	72	606–608	47	551–553	22
747–759	96	654–655	71	604–605	46	549–550	21
737–746	95	652–653	70	602–603	45	546–548	20
732–736	94	650–651	69	600–601	44	543–545	19
727–731	93	648–649	68	598–599	43	539–542	18
720–726	92	645–647	67	596–597	42	535–538	17
715–719	91	643–644	66	593–595	41	531–534	16
710–714	90	641–642	65	592	40	528–530	15
706–709	89	638–640	64	590–591	39	523–527	14
702–705	88	636–637	63	588–589	38	519–522	13
698–701	87	634–635	62	586–587	37	513–518	12
694–697	86	632–633	61	584–585	36	507–512	11
691–693	85	630–631	60	582–583	35	501–506	10
687–690	84	629	59	579–581	34	495–500	9
684–686	83	627–628	58	577–578	33	487–494	8
681–683	82	625–626	57	575–576	32	478–486	7
678–680	81	624	56	573–574	31	472–477	6
676–677	80	622–623	55	570–572	30	461–471	5
674–675	79	620–621	54	568–569	29	452–460	4
672–673	78	618–619	53	567	28	437–451	3
669–671	77	615–617	52	565–566	27	418–436	2
667–668	76	614	51	562–564	26	372–417	1
664–666	75	612–613	50	559–561	25	371 and below	0

TABLE XIV

AVERAGE SCALED SCORES ON N.T.E. TESTS ATTAINED BY GROUPS OF CANDIDATES NAMING DIFFERENT OPTIONAL EXAMINATIONS AS "FIRST OPTION"

		Professional Information				Mental Abilities and Basic Skills			General Culture				
Option	N	Edu. As A Soc. Inst.	Ch. Dev. & Ed. Psy.	Guid. & Meas.	Gen. Pr. & Meth.	Non-Verb. Reas.	Verb. Comp.	Eng. Exp.	Hist. Lit. Fine Arts	Science & Math.	Cont. Affairs	Common Exam. Total	Option
Ed. El. Sch.	810	60	61	60	61	60	58	59	58	57	57	590	58
Eng. L. & L.	389	63	63	64	62	61	67	65	67	60	63	635	61
Soc. St.	489	64	63	64	62	61	63	60	65	62	66	630	62
Math.	176	62	60	66	62	71	63	65	62	74	63	648	69
Biol. Sci.	113	61	61	59	60	61	59	58	57	65	57	598	57
Phy. Sci.	82	63	61	64	61	64	63	59	61	75	66	638	63
French	41	59	62	63	60	61	68	67	66	61	60	626	65
German	10	60	62	62	58	60	70	66	73	66	67	645	63
Spanish	42	59	59	58	58	58	62	62	62	56	60	593	65
Latin	18	61	62	64	62	62	75	73	70	64	66	658	74
Ind. Ed.	29	62	56	62	58	67	59	56	59	71	63	613	65
Com. Ed.	130	60	59	59	58	62	58	63	57	57	58	590	59

APPENDIX B

TYPICAL PROFESSIONAL INFORMATION ITEMS

1947 National Teacher Examinations

A number of items from the Professional Information tests of the 1947 Teacher Examinations are printed below. Some of these items proved to be "difficult" for the 1947 candidates and others appeared to be relatively "easy." In general, they are typical of those appearing in the Teacher Examinations.

The directions for the items ask for the selection of the *one* choice among the five given which *best completes* the statement.

Item analysis results are shown for (1) *students* and (2) *teachers of one or more years of experience*. The difficulty value (D) of each item is given separately for students and experienced teachers. (D) indicates roughly the percentage of the group successfully answering the item. Items with smaller difficulty indices are therefore more difficult and those with high indices are "easy."

For each of the two groups, students and experienced teachers, the examinees papers were sorted into two sub-groups, high (H) and low (L). The figures shown in parentheses opposite the number of the answer to the item, and in the column headed H or L, indicate the percent of the examinees in that particular group that chose the answer of that number.

For example, among the experienced teachers, 62% of the high group and 27% of the low group selected the correct answer (no. 4) of the first item shown. In the student group, 50% of the high group and 22% of the low group chose this correct answer. (It will be noted that among both the experienced teachers and the students there was a marked tendency for the low group to select No. 3 as the answer.)

Item A

During her first visit to the classroom of a new teacher, a supervisor observes that the teacher demonstrates very poor teaching procedures. The supervisor decides that it will be necessary for her to give this teacher a great deal of help. During the course of the recitation, she notes several outstanding faults in the teacher's presentation and manner. At the end of the class period, the supervisor might best

1. tell the teacher that her teaching requires attention and direct her to the reading of two or three basic texts on general teaching methods.
2. thank the teacher for letting her visit the class and go directly to the department head to discuss the teacher's work.
3. tell the teacher frankly that her work could be improved and then go through each point of criticism contained in the notes and make specific suggestions for improvement.
4. talk with the teacher in a friendly way and make only one or two basic suggestions for improving her teaching.
5. comment favorably upon the work of the teacher, in spite of its weakness, in order to establish a friendly basis for future visits.

	Experienced Group D=32		Student Group D=20	
	H	L	H	L
1	(1)	(6)	(2)	(5)
2	(2)	(2)	(1)	(5)
3	(22)	(49)	(40)	(61)
*4	(62)	(27)	(50)	(22)
5	(12)	(12)	(6)	(7)
Omitted	(1)	(4)	(1)	(0)

Item B

A fourteen-year-old girl has been caught a number of times in exaggerated lies. Her parents have expressed concern over her behavior, but are very busy with business responsibilities and do not keep in close touch with the school program and school experience of their daughter. Most of the girl's offenses have not had serious social results, but she is now accused of spreading malicious rumor about another girl, a classmate, whose parents are outraged and are demanding action. From the mental hygiene viewpoint, the most constructive question to be raised is

1. "What is the matter with this child?"
2. "What is the family background of this child?"
3. "Has this child had the proper sort of discipline?"
4. "Has she had enough responsibility under guidance?"
5. "What need is this child trying to satisfy?"

	Experienced Group D=65		Student Group D=81	
	H	L	H	L
1	(1)	(5)	(2)	(2)
2	(2)	(6)	(0)	(7)
3	(2)	(16)	(0)	(10)
4	(1)	(23)	(2)	(7)
*5	(94)	(50)	(96)	(73)
Omitted	(0)	(0)	(0)	(1)

Item C

By constantly repeating and explaining the questions and comments of the pupils during recitation, the teacher encourages

1. clear expression on the part of his pupils.
2. a critical attitude toward the work of other pupils.
3. spontaneous discussion.
4. habitual inattention.
5. respect for pupil opinion.

	Experienced Group D=43		Student Group D=26	
	H	L	H	L
1	(4)	(16)	(9)	(23)
2	(2)	(11)	(5)	(6)
3	(6)	(15)	(6)	(17)
*4	(78)	(29)	(60)	(21)
5	(9)	(21)	(19)	(29)
Omitted	(1)	(8)	(1)	(4)

Item D

If an elementary school teacher wishes to have the most influence on her pupils concerning tolerance of a particular race or nationality group, she should

1. set up group discussions.
2. give a series of talks.
3. plan a series of visits to or experiences with children of that race or group.
4. institute a guided class reading project.
5. invite speakers from that particular race or group.

	Experienced Group D=60		Student Group D=66	
	H	L	H	L
1	(4)	(18)	(7)	(17)
2	(0)	(5)	(0)	(5)
*3	(90)	(44)	(88)	(58)
4	(3)	(9)	(1)	(7)
5	(3)	(20)	(4)	(12)
Omitted	(0)	(4)	(0)	(1)

Item E

A senior high school student with high interest and achievement in English and social studies, but low interest and achievement in mathematics and science, might be expected to find success and satisfaction in

1. architecture.
2. economics.
3. guidance.
4. law.
5. medicine.

	Experienced Group D=38		Student Group D=44	
	H	L	H	L
1	(1)	(2)	(0)	(2)
2	(20)	(26)	(9)	(29)
3	(14)	(34)	(17)	(32)
*4	(64)	(35)	(74)	(36)
5	(0)	(0)	(0)	(1)
Omitted	(1)	(3)	(0)	(0)

Item F

In order to develop in high school students the ability to think critically on controversial issues, it is most important that they learn

1. the laws of logic.
2. techniques for recognizing propaganda.
3. which authorities are trustworthy.
4. the attitude of trying to establish belief on the basis of evidence.
5. how to defend their opinions.

	Experienced Group D=58		Student Group D=69	
	H	L	H	L
1	(1)	(8)	(0)	(10)
2	(11)	(16)	(6)	(10)
3	(3)	(7)	(1)	(7)
*4	(84)	(46)	(91)	(59)
5	(1)	(12)	(1)	(14)
Omitted	(0)	(11)	(1)	(0)

Item G

Most recent writers in the field of education tend to view the curriculum as

1. the selection and arrangement of topics taught in a subject.
2. all the experiences that children have under the guidance of teachers.
3. the arrangement of courses according to the life objectives of the pupils.
4. a group of subjects arranged in a logical sequence.
5. all of the activities in which the children are interested.

	Experienced Group D=34		Student Group D=29	
	H	L	H	L
1	(0)	(12)	(3)	(7)
*2	(70)	(22)	(66)	(18)
3	(16)	(32)	(15)	(36)
4	(4)	(10)	(5)	(13)
5	(10)	(9)	(10)	(16)
Omitted	(0)	(15)	(1)	(10)

Item H

The first step for a teacher to consider in constructing an achievement test is

1. preparing or selecting questions.
2. administering an experimental form of the test.
3. defining the objectives of teaching in the area to be covered by the test.
4. setting up a plan for determining the reliability of the test.
5. setting up a plan for determining the validity of the test.

	Experienced Group D=54		Student Group D=56	
	H	L	H	L
1	(4)	(15)	(2)	(12)
2	(2)	(6)	(3)	(5)
*3	(88)	(36)	(87)	(42)
4	(2)	(12)	(1)	(17)
5	(3)	(18)	(7)	(19)
Omitted	(1)	(3)	(0)	(5)

Item I

Studies of the effects of motion pictures on attitudes of children aged nine to twelve show that

1. the majority of children are markedly upset by exciting pictures.
2. motivation to good conduct is a frequent result of seeing pictures.
3. children accept ideals portrayed in the movies more readily than ideals portrayed in their family experience.
4. there are no attitudinal outcomes, unless the film is followed by a guided discussion.
5. films having a definite slant or bias will produce measurable attitudinal changes.

	Experienced Group D=8		Student Group D=14	
	H	L	H	L
1	(17)	(14)	(11)	(11)
2	(2)	(8)	(0)	(1)
3	(26)	(47)	(40)	(62)
4	(18)	(10)	(4)	(6)
*5	(32)	(19)	(44)	(17)
Omitted	(5)	(2)	(1)	(3)

A COMPARATIVE STUDY OF STUDENTS PREPARING FOR FIVE SELECTED PROFESSIONS INCLUDING TEACHING

LAWRENCE PHILIP BLUM
*Michigan State College**
East Lansing, Michigan

SECTION I

INTRODUCTION AND STATEMENT OF THE PROBLEM

The war has made serious inroads upon the personnel of all professions. The pre-war surplus in every field has been replaced with a post-war shortage. In no area is this shortage of more grave importance than in teaching. Accordingly, it seems fitting at this time to ascertain if the profession of teaching is attracting its full share of top quality youth.

The present study is concerned with a comparison of the personal characteristics and interests of students training for the professions of education, law, medicine, journalism, and mechanical engineering.

THE IMPORTANCE OF SCHOOLS IN AMERICAN SOCIETY

Teachers and schools are the means that society has created and employs for passing on the cultural heritage. Totalitarian and democratic societies alike perpetuate their cultures through these means. The Commission on Teacher Education of the American Council on Education in commenting upon the role that public education has played in transmitting special aspects of our American democratic society has emphasized four such special aspects.[1]

First, faith in freedom and popular government has been a dominant note in American history. Belief in popular government may be thought of as deriving from belief in freedom. The Commission states,[2]

> It is not, of course, sheer coincidence that the extension of popular control of government has been accompanied by an extension of educational opportunities. Indeed, it has always been evident to Americans that if democracy is to work well education must not only be universal but must be planned and carried out with due reference to the responsibilities of citizenship.

Respect for personality is another special aspect of American democracy for which the schools have responsibility.[3]

> Through public appropriation and private benefaction we are forever seeking to see to it that every child has a fair chance to make the most of himself, that each is provided with opportunities calculated to enable him to realize his best potentialities. Recognizing that education is an outstanding means of releasing, developing and disciplining personal powers, we have led the world in our support of schools and colleges. Throughout our history, moreover, facilities for adult education, formal and informal have been developed and patronized. Education, in a word, we have seen as an indispensable and leading means to the realization of our dearest ends.

The American belief in the social nature of man and the rule of reason in social relationships demand that the teacher-pupil relationship be one of friendliness, in which each party exercises a sensitive regard for the needs and purposes of the other. Reason and reasonableness dominate the relations of democratic men among themselves. Through education it is hoped the rule of reason will ultimately triumph over the rule of force.

Many other aspects of democratic life could be listed but enough has been said to emphasize the importance of education in perpetuating and strengthening this way of life.

* The author wishes to express his appreciation for the assistance rendered by A. S. Barr, Professor of Education, University of Wisconsin, in the conduct of this investigation.

[1] Commission on Teacher Education, *Teachers For Our Times*, pp. 39–40.

[2] *Ibid.*

[3] *Ibid.*

The Importance of an Adequate Teaching Staff for the Schools

It is not sufficient to appreciate the importance of education to democracy only. Attention must be given to the continued provision of a teaching force adequate to operate the schools. The facts relative to the teacher shortage have received much publicity within recent months and it might be well to examine the situation as it exists at present.

The Commission on Teacher Education of the American Council on Education[4] reported about one million persons serving as teachers, supervisors, and administrators in the elementary and secondary schools of the United States. This figure is based on the situation existing shortly before we went to war. The number of teachers now is about 860,000. It is estimated that 350,000 teachers have quit the profession since 1941. This decline in the number of teachers occurs coincidently with the fact that during the five war years 13,000,000 babies were born which is 4,000,000 more than was predicted by population experts. The elementary schools first felt the rush of this new tide of life in 1946, when kindergarten enrollments suddenly increased after years of stability. Elementary school enrollments will increase rapidly until 1950 with a subsequent demand for more teachers and more school rooms. By 1953 the high schools will feel the surge and they will expand until 1960. No one knows whether the birth rate will fall again to the pre-war level.[5]

The mere fact of a current teacher shortage might be tolerable if there were prospect for improvement in the future. This does not seem to be the case. Benjamin Fine,[6] the education editor of the New York Times reports that less than one-half the men enrolled in teachers colleges now expect to teach as compared with three-quarters in 1940. Fine further states that the 189 teachers colleges of the country have an enrollment of 150,000 compared with 143,000 in 1940.

> "However this registration is misleading. A majority of the students do not intend to go into teaching. They have no other place to enter—and so they are going to a teachers college with the intention of shifting to a liberal arts college as soon as space becomes available."

Schorling[7] queried all 1,288 seniors in the liberal arts college at the University of Michigan who were specializing in general science, physics, chemistry, biology, and mathematics. Of the total only thirteen said they planned to go into teaching. Schorling further states,

> Last June I worked with sixty-five seniors in the School of Education. I said to them, "If you could get a job in some other profession would you go into teaching? Three of the sixty-five said they would. Eight said they might. The rest said they would not.

These statements are typical of the current situation regarding the numerical shortage of students training for teaching.

Perhaps of even greater importance than numbers as far as educational objectives are concerned is the matter of quality in teachers. The condition regarding training deficiencies is illustrated by the number of special permits to teach which have been issued. John W. Studebaker,[8] Federal Commissioner of Education, in his annual report issued in February, 1947 says that

> The number of emergency permits granted for teaching increased from 70,000 in 1945 to 108,000 in 1946. About three-fourths of these were in the elementary schools where pupil progress and development are to so large an extent dependent on the guidance of adequately prepared teachers.

It is well known that emergency permits represent the satisfying of a temporary need by waiving requirements which were previously considered minimum.

Still another aspect of quality in teachers pertains to their physical and mental health. Patry[9] states that:

> Statisticians estimate that unless more effective mental health precautions are taken than now prevail, four out of every one hundred children now in school are likely sooner or later to be patients in a mental hospital.

[4] Commission on Teacher Education, *Teachers For Our Times*, pp. 39–40.

[5] "Schools For a New World", *The American Association of School Administrators of the National Education Association of the United States, Twenty-Fifth Yearbook.*

[6] *The New York Times*, February 16, 1947, p. 18.

[7] *The New York Times*, February 16, 1947, p. 18.

[8] Annual Report, U. S. Commission of Education.

[9] F. L. Patry, "The Menace of the Maladjusted Teacher". *Journal of Education*, Vol. 116 (June, 1933), p. 288.

The teachers these children have can largely determine the prevention, detection and cure, or spread of these conditions. According to Townsend,[10]

> The chances are seven to one that in the course of twelve years of public education a child will encounter two maladjusted teachers—teachers who are unstable and neurotic if not psychopathic.

The physical health of teachers is, on the whole, fairly good. As a result of the survey conducted by the Committee on Teacher Health of the Department of Classroom Teachers of the National Education Association,[11] the conclusion is drawn that teachers as a group are subject to no abnormal amount of poor health. Few occupational groups probably could muster a larger percentage of workers in excellent health or boast of fewer workers whose health is definitely poor. Regarding the importance of various health disorders questionnaires were sent out by the above committee to 154 superintendents of schools, 153 principals, and eleven school doctors. They were asked to rank the various disabilities in order of their importance. The following order resulted:

1. Lack of mental and emotional poise.
2. Inability to make necessary social adjustments.
3. Physical handicaps and diseases of the body.

Questionnaire replies from 5,150 classroom teachers showed one-third of the group to be bothered with nervousness. Two-fifths of the group reported that they were subject to worries intense enough to interfere with sleep, efficiency as a teacher, and general good health. All this emphasizes the importance of the physical and mental health of the teaching staff. It is apparent that only the best persons should be allowed to enter the profession.

What has been said about the importance of physical and mental health among teachers is summarized nicely by the Commission on Teacher Education[12] as follows,

> It is only when we grasp these truths that the full significance of teaching become manifest and such grasp comes most surely when we permit our imagination to contemplate the whole body of teachers. Inferiority in any particular teacher may be carelessly thought of as no life and death matter but when we think of teachers in the mass, when we consider the total significance of their function in society we see things far differently. Then we see that teachers are truly indispensable, that their quality is a matter of deep concern for us all.

The Necessity of Recruitment and Selection

The problem of securing the right people consists of two parts—recruitment and selection. By recruitment is meant "selling" the profession to youth. This job has been done very inadequately in the past.

A recent survey of 300 deans of American colleges and universities conducted by the New York Times[13] shows that teaching is held in low esteem by college students. This is particularly true of superior students. In answer to the question, "How do your students regard teaching as compared with other professions?" sixty-eight and three-tenths per cent answered, "Poorer", twenty-six and seven-tenths said, "About the Same", and only five per cent said, "Better". The concensus of the 300 deans of liberal arts colleges and graduate schools is that the following are the most important reasons that keep men and women out of the teaching profession.

1. Poor salaries.
2. Community restrictions.
3. Community pressures.
4. Heavy teaching schedules.
5. Arbitrary school administrations.
6. Too many technical regulations covering certification.
7. Inferior status of teachers in the community.
8. Lack of prestige among the professions.

Fine[14] concludes by saying,

> That teachers and students consider the teaching profession as a second rate profession is a matter of deep concern for educators and laymen alike. In a democracy the teachers are our most valuable asset.

[10] M. E. Townsend, "Mental Hygiene and Teacher Recruiting," *Mental Hygiene*, Vol. 17 (October, 1933), pp. 598–604.

[11] Fit to Teach, *Department of Classroom Teachers of the National Education Association of the United States, Ninth Yearbook*, p. 17.

[12] *Teachers For Our Times*, *op. cit.*, p. 11.

[13] *The New York Times*, February 16, 1947, p. 18.

[14] *Ibid.*

The public might well take this problem under advisement and attempt to raise teaching to the same status now enjoyed by doctors, lawyers, engineers, and business men.

After teaching has been made attractive enough to be considered by large numbers of youths, it is necessary to select the best of these for admission into the profession. The heart of the problem of selection lies in the possibility of predicting teaching success from a knowledge of existing measurable qualities as intelligence, personality, health, knowledge, skill and other traits. These predictions can be made only after these qualities have been measured and the measurements compared with subsequent teaching success based on adequate criterion.

As we slowly build up our understanding of what a person must have, know, and be in order to succeed in teaching, it seems important also to understand what differentiates a person entering teaching from a person entering any of the other professions. Dashiell[15] states the problem in this way,

> With our separate schools of training for the separate occupations of lawyer, physician, teacher, engineer, business man, clergyman, the fallacious assumption has often crept in that the learned professions might be considered quite distinct as concerns the psychological traits necessarily involved in their successful pursuit. On the other hand, analysis of the individual with a view to vocational counsel has often proceeded to the assumption that a given personality trait when found markedly present in the consultant may be taken as pointing strongly toward a career in law and away from teaching, or toward finance and away from medicine.

The question might be phrased thus: Is there a particular quality or combination of qualities which if a person possesses them will allow him to succeed in any undertaking he attacks? Is the person who is a successful lawyer just as likely to be a successful engineer or teacher if he had chosen to follow those professions? This study is based on the theory that there are certain uniformities in the interests and personalities of persons which cause them to enter one profession rather than another. Undoubtedly there are many other factors that determine vocational choice but interest and personality are sufficiently extensive to warrant a study of their own. Since all of the vocations and professions could not be studied only five were chosen. Teaching was chosen because of the bearing of the study on the matter of teacher selection. The other professions chosen for study were: law, medicine, journalism, and mechanical engineering.

Aside from the particular application of this study to the problems of the teaching profession, it has application to the general area of guidance and counseling. It is possible to differentially predict or advise for which of a number of professions or occupations a person should train. A knowledge of interest and personality factors involved may enable guidance and counseling to proceed more effectively by giving a preliminary delimitation of possible areas.

The importance of this factor is emphasized by the National Guidance Trend and Evaluation Studies recently published under the authorship of A. H. Edgerton.[16] Edgerton has pointed out that six times as many youth aspire to professional occupation as are likely to be employed in them. He states, "A large majority of the boys studied expressed intentions of entering white collar jobs, although more than seven out of ten seemed destined to wear overalls." The need for adequate guidance services to prevent this human and social waste is obvious. A knowledge of differentiating interest and personality factors among the professions would aid materially in providing this type of guidance.

In order to select efficiently it is necessary to understand the personality and interest factors which differentiate one professional group from another. It is the purpose of this research to lay the ground work for successful differential predictions by discovering differentiating factors among students in various professional schools. Specifically the questions to be answered are:

1. Are persons studying to be teachers different in personality and interests from those studying for careers in four other professions, namely, law, medicine, mechanical engineering, and journalism.

[15] J. F. Dashiell, "Personality Traits and the Different Professions," *Journal of Applied Psychology*, Vol. 14 (1930), pp. 197–201.

[16] A. H. Edgerton, *Readjustment or Revolution*, p. 238.

2. Is there a significant correlation between personality traits and interests.

3. In general, is there enough homogeneity among the personality and interest patterns of those in various professions to warrant using these variables as a basis for counseling.

SECTION II

PREVIOUS RESEARCH RELATED TO THIS INVESTIGATION

The studies related to this investigation may be divided into two groups. The first group includes those which compare students preparing for careers in teaching with students preparing for careers in fields other than teaching. The second group of investigations compares various professional groups regarding a number of traits.

A number of studies have been made regarding the comparison of intellectual traits. Henmon and Holt[1] studied the relationship between stated choice of occupation of 16,350 high school seniors in Wisconsin and their scholastic aptitude. They comment unfavorably on the scholastic ability of the eighteen per cent of high school seniors who selected teaching as a career. This is the largest group of all, but the selection is almost "run of the mine" in the trait that should be most significant for success in the vocation.

As a result of the extensive testing program carried on in the colleges and high schools in Pennsylvania, Learned[2] concludes that students preparing for teaching are inferior in regard to their general education background to those who are preparing for non-teaching careers. According to Learned

> In so far as those expecting to teach are concerned, the results of the Pennsylvania examinations are disappointing, and there is no good reason for believing that the conditions described are confined to Pennsylvania. The majority of the group are most at home in the lower half of the total college distribution; they exhibit inferiority in contrast with the non-teachers in nearly every department of study; and they show up badly when compared in the same tests with students four years below them who represent the educational group with which they must be prepared to deal. The ability and attainment of those selected and prepared for teaching in special centers for that purpose is consistently and conspicuously below the level of the group as a whole. . . . It is the unanimous opinion of all who have worked with this material, who thoroughly understand the tests, and who have studied the results as they have accumulated, that the situation is essentially as the findings reveal it: that it is deplorable; and that it is totally unnecssary.

A comparison of teachers college students with liberal arts students was reported by Harrison,[3] who answered the question, "What of the teachers educated in liberal arts colleges? Are they inferior to non-teaching students in liberal arts colleges?" This was considered an important question because in 1941 in the state of Missouri 944 teacher certificates were issued to graduates of private liberal arts colleges. In the state of Iowa 934 teachers were educated at private four year colleges from 1930 to 1940. Harrison compared the intelligence of teaching and non-teaching graduates of Park College, Missouri, graduating during the years 1932 to 1942. The American Council of Education Psychological Examination was used every year during that period. He concluded that the graduates of Park College who go into teaching are not of lower mental ability than are the graduates who go into other types of work.

Welborn[4] studied the results of the administration of the American Council on Education Psychological Examination to freshmen in teachers colleges and liberal arts colleges throughout the country. The tests were given each year for a ten year period and the scores were reported from 165 to 243 colleges each year. The number of freshmen students on whom scores were reported ranged per year from 3,500 to 7,200. His conclusions indicated teachers college freshmen did score somewhat lower than liberal arts freshmen but not to any great extent. He believed that his data refuted the assertion frequently made

[1] V. A. C. Henmon, and F. O. Holt, A Report on the Administration of Scholastic Aptitude Tests to 34,000 High School Seniors in Wisconsin in 1929 and 1930. Bulletin of the University of Wisconsin, No. 1786, (June, 1931).

[2] W. S. Learned, Tested Achievement of Prospective Teachers in Pennsylvania, Carnegie Foundation for the Advancement of Teaching, Thirty-first Annual Report, 1936, pp. 31–51.

[3] M. R. Harrison, "Intelligence Scores of Prospective Teachers in a Liberal Arts College," *School and Society*, Vol. 56 (1942), pp. 416–420.

[4] E. H. Welborn, "The Quality of Students Attending Teachers College," *Journal of Educational Research*, Vol. 39 (1946), pp. 668–670.

that teachers college students are substantially inferior to liberal arts students regarding intellectual quality.

A study at Brooklyn College[5] of 2,006 student teachers' scores on the American Council on Education Psychological Examination revealed that Brooklyn College education students were above the national norm and above the norm of Brooklyn College students as a whole. It was believed that similar studies in the three other Municipal Colleges of New York City would yield similar results. Probably an explanation was to be found in the careful selection of students for the professional courses of education.

Kiely[6] compared students of teachers colleges with students of liberal arts colleges. She used twelve tests covering information, judgment, and attitudes. She also used a questionnaire to get information comparing the background of the teachers college students and liberal arts college students in regard to certain other qualities. The total number of students tested and questioned was 1,356. Some of her comparisons of the groups are as follows:

1. In age and nativity there was no difference between the teachers college students and the liberal arts college students.
2. Liberal arts students are more often children of native born parents than are professional students.
3. Liberal arts students usually come from homes of business and professional people to a significantly larger extent than do professional students.
4. Liberal arts students tend to come from large cities to a greater extent than do professional students.
5. Professional students tend to have lived in villages and on farms to a greater extent than liberal arts students.

Regarding factual information and general knowledge there was no significant difference between the two groups. The professional education students, as would be expected, were stronger on professional information. The liberal arts students had a very slight advantage on judgment in general situations. The professional education students had a slight advantage on professional judgment. Regarding attitude, a slightly larger per cent of professional students tended to react against certain suggested words in a cross-out test. The only significant differences that appeared were in technical information and in certain attitudes toward social issues. This study refuted the assumption that liberal arts students in general are more cultured than professional students.

Lough[7] used the Minnesota Multiphasic Personality Inventory to determine if there were personality differences in students enrolled in the general curriculum and those enrolled in the music teaching curriculum at New York State Teachers College. She compared the per cent of students in each group who scored above the mean on each of the scales of the test. Only slight differences did appear. The teaching group showed a slight tendency toward hypomania.

A related study was that by Mason,[8] who studied 700 school teachers who were hospitalized for mental disorders in the State of New York. Table I shows the prominence of specific disorders among all hospitalized mental cases in New York and also their prominence among maladjusted teachers.

Three of these prominent disorders occurred more frequently among the institutionalized teacher population than among the total institutionalized population of the state of New York. These three are Dementia-Praecox, Manic-Depressive, and Paranoia. A reason for the prominence of Paranoia in this group is attributed to the existence of certain systematized ideas underlying Psychotic Paranoia. Teachers fall into this group perhaps because they are over-organized from the time they begin teacher training. Mason opens up the question as to whether persons possessing a constitutional make-up, the constituents of which are characteristic of Dementia-Praecox or Manic-Depressive psychosis enter the teaching profession in large numbers. He notes that the seclusive type of personality which characterizes these psychoses, was prominent among this group of hospitalized teachers.

Stagner[9] sought to analyze the selective effect of different courses taken at the University of Wisconsin. The question he sought

[5] "Do Superior Students Prepare for Public School Teaching?", *School and Society*, Vol. 54 (1941), p. 298.

[6] Margaret Kiely, *A Comparison of Teachers College Students and Students of Liberal Arts Colleges*, p. 34.

[7] Orpha M. Lough, "Teachers College Students and the Minnesota Multiphasic Personality Inventory," *Journal of Applied Psychology*, Vol. 30 (1946), pp. 241–246.

[8] F. V. Mason, "A Study of Seven Hundred Maladjusted School Teachers," *Mental Hygiene*, Vol. 15 (1931), pp. 576–599.

[9] Ross Stagner, "The Measurement of Personality Traits," pp. 253–255.

TABLE I

COMPARISON OF PER CENT OF TEACHERS AND PER CENT OF GENERAL POPULATION IN NEW YORK STATE HOSPITALIZED FOR CERTAIN MENTAL DISORDERS

Type of Disorder	% of Total Hospitalized Population in New York State	% of Hospitalized Teachers
Dementia-Praecox	27	37
Manic-Depressive	13.9	23.8
Cerebral-Arteriosclerosis	11.8	3.6
General Paralysis	10.7	3.5
Senile Dementia	10.4	7.2
Paranoia	1	6.1

to answer was this, "Do students tend to select a given course because of a certain trend in personality traits? Are there any outstanding characteristics of engineers, agriculture students, lawyers, etc.?" He presented data for 317 women and 335 men based on the Bernreuter Personality Inventory. The 317 women were enrolled in letters and science, nursing courses, home economics, education, and physical education. He arrived at the following generalizations from his data:

1. Letters and science women tend to be somewhat neurotic, very low in self-sufficiency, very definitely introverted, and about average on dominance.

2. Nurses appear to be quite similar to letters and science women, except that they are also very submissive.

3. Home economic students are characterized only by extroversion and submissiveness.

4. Women in education possess dominance as their distinguishing trait.

5. Physical education women are the most balanced emotionally and the most self-sufficient group. They also tend toward extroversion and dominance.

Stagner, after computing the critical ratio between the highest and lowest group on each scale, found significant differences on every scale. The conclusion was drawn that women enrolled in various courses have certain distinguishing personality characteristics.

The men who were tested with the Bernreuter Personality Inventory were enrolled in agriculture, pre-medial course, engineering, letters and science, the general course, which is the letters and science course without languages, and physical education. The well-defined differences between groups which appeared for the women did not appear in this group. The only traits showing a statistically reliable difference between the extremes was self-sufficiency. The other traits show very insignificant differences.

To study the question of the relationship between personality traits and professional school enrolled in, Dashiell[10] sent a questionnaire to eighteen professors in five professional schools at the University of North Carolina. On the questionnaire were listed ten personality traits. Each professor was asked to rank the ten personality traits in order of its importance for their particular profession. It was found that a professor in a given professional school is little more likely to agree with a colleague in the same professional school than with a professor teaching students in a very different professional school. There was very little demonstrated agreement even within a given profession as to what personality and character traits would make for success in that professions. Dashiell states,

> One reason why professions do not become differentiated is because these professions are not true units. An accountant and an automobile salesman are both in commerce but both may require different traits. A country doctor and a specialist may require different traits, but both practice medicine. It is clearly suggested that so far as equipment of personal traits is concerned a given individual is likely to do almost as well in one professional line as in another, granted the same training and granted the same motivation. This last points to the observation that psychologists, interested in vocational problems, have been on the right track in emphasizing the study of interests. And the recent development of techniques for occupational interest-analysis at the hands of Freyd,

[10] J. F. Dashiell, "Personality Traits and the Different Professions," *Journal of Applied Psychology*, Vol. 14 (1930), pp. 197–201.

Strong, Remmers, and others is most promising.

A study of the relationship between personality traits and occupation was made by Verniaud[11] who compared three contrasting non-professional occupations. The occupations were clerical workers, department store saleswomen, and optical workers. She administered the Minnesota Multiphasic Personality Inventory to ninety-seven workers engaged in these three occupations. In view of the possibility that there might be a relationship between high scores on the scales of the Minnesota Multiphasic Personality Inventory and the job that a person was doing, a clinical study was made of each individual scoring above the mean on any scale. This clinical evidence indicated a relationship between type of work, type of worker, and the scores on the personality scales of the Minnesota Multiphasic Personality Inventory.

Harmon and Wiener[12] reported using personality traits as part of the vocational advisement program in a Veterans' Administration, Rehabilitation, and Education Division. The test used was the Minnesota Multiphasic Personality Inventory. A study of the profiles indicated limitations on the type of work a man should undertake. They state,

> The Minnesota Multiphasic Personality Inventory, as part of the battery used in vocational diagnosis of disabled veterans applying for rehabilitation, has proved to be an instrument of prime utility. It has served to delineate personality characteristics of crucial importance in the actual choice of a vocation and has yielded valuable information on the prognosis of success in training. An elevation on the hypochondriasis, depression, and hysteria scales eliminates dirty, heavy jobs and indicates a job at the low end of the ability scale where minimum stress is encountered. High-pressure occupations as selling should be avoided. Elevations on Paranoia and Schizophrenia require relatively routinized, well-regulated jobs in preference to work requiring initiative, self-discipline, and social contact. Elevations on the psychopathic deviate and hypomania scales indicate relatively undisciplined jobs where individual initiative and aggressiveness are at a premium and which provide a maximum variety in work processes, locale, and associates.

This implies that various occupations do require different personality and character traits.

Wiener[13] has compared the personalities of successful and unsuccessful trainees in four job categories. "Success" was defined as completion of the training course and "Unsuccessful" was defined as interruption or discontinuance of training for any reason. The four job groups were clerical, electrical, shop, and bench jobs. The results indicate that unsuccessful trainees were slightly higher on all scales than were the successful trainees. The biggest differences were on the Schizophrenia and Hypomania scales where the unsuccessful trainees seemed to be less oriented to practical situations and more independent in thought and action than the successful trainees. Bench work trainees were generally the group closest to the average on the Minnesota Multiphasic Personality Inventory. This result probably reflects selective counseling since the delicate work required may deter the nervous veteran and also motivate his advisor to avoid suggesting it.

Kaback[14] investigated the problem of differentiated "vocational personalities" by use of the Rorshach Group Method. The Rorshach Group Method was given to seventy-five practicing pharmacists and to seventy-five student pharmacists. It was also given to seventy-five practicing accountants and seventy-five student accountants. She concluded that differences between the professional and pre-professional groups do appear, but the differences are not large enough to be used for predictive purposes. She states,

> The results of this investigation fail to show that any pharmacy or accountancy personality exists. Each profession appears to attract persons with varying degrees of emotional stability, introversiveness, extroversiveness, intellectual level, etc.

[11] W. M. Verniaud, "Occupational Differences of the Minnesota Multiphasic Personality Inventory," *Journal of Applied Psychology*, Vol. 30 (1946), pp. 604–613.

[12] L. R. Harmon and D. N. Wiener, "Use of the Minnesota Multiphasic Personality Inventory in Vocational Advisement." *Journal of Applied Psychology*, Vol. 29 (1945), pp. 132–141.

[13] D. N. Wiener, "Advisement Factors in Successful and Unsuccessful Rehabilitation Trainees," Veterans' Administration, Minneapolis, Minnesota, Information Memorandum No. 6.

[14] G. R. Kaback, *Vocational Personalities*, Contributions to Education, No. 924.

Additional research relating to this problem has been reported by Darley and by Tyler. Darley[15] studied the relations between attitude, adjustment, and vocational interest scores. The Strong Vocational Interest Inventory, the Bell Adjustment Inventory, and the Minnesota Inventories of Social Attitude, and the Minnesota Scales for the Survey of Opinions were used. Altogether twelve areas were measured. The tests were given to students at the General College of the University of Minnesota. The results indicated that persons possessing certain occupational interests can be differentiated in terms of abstract ability, specific aptitude, specific achievement or proficiency measures, and personality characteristics. Darley accepts this as explanatory of the existing stereotypes of professional and technical students.

Tyler,[16] at the University of Oregon, studied the relation between the scores on the Strong Vocational Interest Blank and scores on other vocational and personality tests. She computed the correlation between each interest score and each personality and attitude variable, keeping the men and women separate. All correlations which proved to be significant were selected for further analysis which consisted of an item analysis of the personality measurements under consideration. She concluded that social and religious attitudes do slightly differentiate persons with various interests. Neurotic tendencies showed no relationship to any kind of consistent interest pattern.

The survey of previous investigations indicates that there is no evidence based on comparisons of intelligence or personality or interests that students studying for teaching careers are inferior to those preparing for other professions or occupations. There is some slight evidence that personality traits and interests do differentiate among professional and occupational groups.

SECTION III

THE PLAN OF PROCEDURE

The Instruments Used.—The instruments selected for use in this investigation were a questionnaire, the Minnesota Multiphasic Personality Inventory and the Strong Vocational Interest Blank.

The Questionnaire.—The questionnaire consisted of seventeen items. The responses which were compared by schools were those pertaining to age, height, weight, size of family, occupation of father, population of home community, health, and the source of interest in the profession that is being prepared for.[1]

The Minnesota Multiphasic Personality Inventory.—The Minnesota Multiphasic Personality Inventory, hereafter referred to as the M. M. P. I., was chosen as the personality measuring instrument to be used in this study. This choice was made for two reasons. First, because of the nature and number of the personality traits on which it yields quantitative scores. These traits are hypochondriasis, depression, hysteria, psychopathic deviation, masculinity or femininity of interest pattern, paranoia, psychasthenia, schizophrenia, and hypomania. These terms are usually descriptive of clinically abnormal states. All people at various times and in varying intensity possess these traits and it is only when they get out of control that serious difficulty ensues. In comparing the personality traits of students preparing for various professions by use of the M. M. P. I. it will be determined if certain groups possess certain traits or combinations of traits to a greater extent than other groups.

Another reason for choosing the M. M. P. I. in this investigation was the fact that part of the normal population on which it was standardized was a college student population similar to the one used in the present study.

Description of the Minnesota Multiphasic Personality Inventory.—The Minnesota Multiphasic Personality Inventory is a technique developed at the University of Minnesota and published in 1943. The M. M. P. I. is copyrighted in an individual form and in a pencil and paper group form. The individual form consists of five hundred fifty statements, each printed in simple language on a separate card. These statements cover a wide range of subjects from the physical condition, to the morale and social attitudes of the individual being tested.

The subject is asked to sort all the cards into three categories indicated by guide cards,

[15] J. G. Darley, "A Preliminary Study of Relations Between Attitudes, Adjustment, and Vocational Interest Test," *Journal of Educational Psychology*, Vol. 29 (1938), pp. 47–52.

[16] L. F. Tyler, "Relationship Between Strong Vocational Interest Scores and Other Attitude and Personality Factors," *Journal of Applied Psychology*, Vol. 29 (1945), pp. 58–68.

[1] See appendix for copy of questionnaire, in thesis on file in Library, University of Wisconsin.

"True," "False," and "Cannot Say." If the subject believes the statement to be true as applying to him, he places it behind the "True" guide card. If he believes it to be false as applying to him he places it behind the "False" guide card. If he is uncertain about the statement he classifies it behind the "Cannot Say" guide card. The time required for administration varies widely but is rarely longer than ninety minutes and is commonly as short as thirty minutes.

Description of the Scales.—At the present time the M. M. P. I. yields scores on four validating scales and the nine personality scales. The four validating scales are a question scale, lie scale, validity or (F) scale, and a test attitude or (K) scale. The personality scales on which scores can be produced are those for Hypochondriasis, Depression, Hysteria, Psychopathic Deviate, Masculinity-femininity of interests, Paranoia, Psychasthenia, Hypomania, Schizophrenia.

The scales are based upon clinical cases classified according to conventional psychiatric nomenclature. Their description follows.

The Question Score (?): The Question Score is a validating score consisting simply of the total number of items put in the "cannot say" category. The size of this score affects the significance of the other scores.

The Lie Score (L): The Lie score is also a validating score that affords a measure of the degree to which the subject may be attempting to falsify his scores by always choosing the response which places him in the most acceptable light.

The Validity Score (F): The Validity score is not a personality scale, but serves as a check on the validity of the whole record. If the F score is high, the other scales are likely to be invalid either because the subject was careless, or unable to comprehend the items, or because someone made extensive errors in entering the items on the record sheet.

The Hypochondriasis Scale (H_s): The H_s scale is a measure of amount of abnormal concern over bodily functions.

The Depression Scale (D): The D scale measures the extent of the clinically recognized symptom complex, depression.

The Hysteria Scale (H_y): The H_y scale measures the degree to which the subject is like patients who have developed conversion-type hysteria symptoms.

The Psychopathic Deviate Scale (P_d): The P_d scale measures the similarity of the subject to a group of persons whose main difficulty lies in their absence of deep emotional response, their inability to profit from experience, and their disregard for social mores.

The Interest Scale (Mf): This scale measures the tendency toward masculinity or femininity of interest pattern; a high score indicates an interest pattern corresponding to that of the opposite sex.

The Paranoia Scale (P_a): The P_a scale was derived by contrasting normal persons with a group of clinic patients who were characterized by suspiciousness, oversensitivity, and delusions of persecution.

The Psychasthenia Scale (P_t): The P_t scale measures the similarity of the subject to psychiatric patients who are troubled by phobias and compulsive behavior.

The Schizophrenia Scale (S_c): The S_c scale measures the similarity of the subject's responses to those patients who are characterized by bizarre and unusual thoughts or behavior.

The Hypomania Scale (M_a): The M_a scale measures the personality factor characteristic of persons with marked overactivity in thought and action.

The Development of the M. M. P. I.—The M. M. P. I. is a product of S. R. Hathaway of the Division of Nervous and Mental Diseases, University of Minnesota, and J. C. McKinley, Department of Psychology, University of Minnesota. Hathaway and McKinley[2] state their reason for developing the inventory as follows:

> For several reasons it has seemed that a multiphasic personality schedule might be constructed which would be of greater value in the medical and psychiatric clinic than is true of personality inventories already available. It is desirable that more varied subject matter be included to obtain a wider sampling of behavior of significance to the psychiatrist, rather than utilize independent sets of items for special purposes such as one might use in studying any particular reaction type. Then, too, in dealing with clinic patients, there seemed to be a need for simpler wording and a simpler method of presentation than is usually the

[2] S. R. Hathaway and J. C. McKinley, "A Multiphasic Personality Schedule: I. Construction of the Schedule," *Journal of Psychology*, Vol. 10 (1940), pp. 249–254.

case, in order to stay within the comprehension of those individuals who are not of high intellectual or cultural level. Finally it seemed desirable to create a rather large reservoir of items from which various scales might be constructed in the hope of evolving a greater variety of valid personality descriptions than are available at the present time.

Hathaway[3] in a separate discussion of Psychopathic Inferiority points out that psychiatrists have long recognized a non-psychotic group of persons whose main difficulty lies in their absence of emotional response, inability to profit from experience and disregard for social mores. They seem to have an apparent constitutional lack of responsiveness to social demands of honesty, truthfulness, or decency. Hathaway believes there is a relationship between this group and those classified on the Bernreuter Personality Inventory as having an extroverted or "super normal" personality. He points out how, if their condition becomes serious enough to require psychiatric care, they promise the clinician faithfully and sincerely to reform and repeatedly manifest good intentions. They are notorious backsliders and usually do not change their ways to the slightest degree. In three years Hathaway could accumulate only nine authentic cases of Constitutional Psychopathic Inferior. To these nine he gave the Bernreuter Personality Inventory and the Humm Wadsworth Adjustment Scale. On the Bernreuter Inventory Scale for Neurotic tendency the scores for all nine fell among the ten per cent least neurotic and most adjusted. On the Humm Wadsworth Scale all nine cases ranked above average or extremely normal. Hathaway concluded that a better personality inventory was needed to differentiate Constitutional Psychopathic Inferiors from normal people. The M. M. P. I. was designed to fill this need.

Subjects for the standardization and development of scales were obtained from several sources. The various groups are as follows:

1. A normal group from the University hospital out patient department (724 cases). Only those who were visitors or bringing patients and who were not under a physician's care themselves were accepted for this group.

2. A normal group from the University Testing Bureau (265 cases). These were mainly pre-college high school graduates who had come to the Testing Bureau for guidance.

3. A group of normal persons who were contacted through the courtesy of the local W. P. A. (265 cases). These were all skilled workers from local W. P. A. projects.

4. Patients in the general wards of the University Hospital (254 cases). These were all checked so they did not include obvious psychiatric conditions.

5. Patients in the psychopathic unit of the University Hospital and out patient neuropsychiatric clinic. (221 cases).

Each of the diagnostic scales was constructed in approximately the same way. The development of the scale for hypochondriasis is used as an illustration of the procedure. To develop the Hypochondriasis (H_s) scale pathological cases were selected with meticulous care to include only those patients manifesting pure, uncomplicated hypochondriasis. Fifty cases of this sort were available. A normal group consisting of 162 young adults ranging from twenty-six to forty-three in age and 265 University of Minnesota freshmen was used. The percentage frequency of response on each item was tabulated for the normal and pathological groups. An item was tentatively selected for scale construction only if it showed a percentage frequency difference between the criterion group and the normal group which was at least twice its standard error.

The same general procedure is described by Hathaway and McKinley[4] for construction of the Depression (D) Scale by McKinley and Hathaway[5] for construction of the scales for Hysteria (H_y), Hypomania (M_a) and Psychopathis Deviate (P_d). McKinley and Hathaway[6] used this procedure for construction of the Psychasthenia (P_t) scale also.

The Validity or (F) scale consists of sixty-four items which are responded to in the scored direction only rarely by normal people. Examples are:

[3] S. R. Hathaway, "The Personality Inventory as an Aid in the Diagnosis of Psychopathic Inferiority," *Journal of Consulting Psychology*, Vol. 3 (1939), pp. 89–97.

[4] S. R. Hathaway and J. C. McKinley, "A Multiphasic Personality Schedule: III. The Measurement of Symptomatic Depression," *Journal of Psychology*, Vol. 14 (1942), pp. 73–74.

[5] J. C. McKinley and S. R. Hathaway, "The Minnesota Personality Schedule: IV. Hysteria, Hypomania, Psychopathic Deviate," *Journal of Applied Psychology*, Vol. 28 (1944), pp. 153–174.

[6] J. C. McKinley and S. R. Hathaway, "A Multiphasic Personality Schedule: IV. Psychasthenia," *Journal of Applied Psychology*, Vol. 26 (1942), pp. 614–621.

1. Everything tastes the same (true).
2. I believe in law enforcement (false).
3. I see animals, things, or people around me that other people do not see (true).

A high F score indicates either a lack of comprehension on the part of the subject or else a clerical error in scoring the responses. It could also indicate a schizoid condition, the unusual responses revealing delusional or aberrant thinking.

Meehl and Hathaway[7] described an experiment in which a group of fifty-four A. S. T. P. trainees in psychology courses at the University of Minnesota took the M. M. P. I. under two sets of conditions. The first time they took it with the usual set of instructions. The second time they were to respond in such a way as to fake abnormality if possible. On ninety-six per cent of the faked records the F scale showed a sufficient increase indicating that even men trained in Psychology betrayed themselves when they tried to fake a M. M. P. I. record.

The Lie (L) scale consists of 15 items representing situations desirable socially, but rarely true of individuals. Examples are:

1. I tell the truth in all situations (true).
2. I read all the editorials in the newspaper every day (true).

Meehl and Hathaway[8] performed an experiment to check the hypothesis that the L scale was a trap for the naive subjects, but could be easily avoided by more sophisticated subjects. The M. M. P. I. was administered to fifty-four psychologically trained ASTP students at the University of Minnesota. The first time they took the test under the usual set of instructions. The second time they were instructed to respond in such a way as to present as favorable a picture of themselves as possible. The results for the two tests were almost identical indicating that intent to deceive is not always detectable when the subjects are relatively normal and sophisticated. The L scale is therefore of dubious value.

Recently a new scale called the (K) scale has been added to the M. M. P. I. through the efforts of Meehl and Hathaway.[9] The K scale is a correction scale that can be used to correct for certain test taking attitudes which tend to invalidate a record. One of the most important failings of almost all structured personality tests is their susceptibility to "faking" or "lying". This deception may be conscious or unconscious and may amount to mere role-playing on the part of individuals who may be consciously honest and sincere in these responses.

Meehl and Hathaway[10] item analyzed a large number of records from abnormal subjects and from normal subjects. Items were selected from normal records which showed normal responses. Items were selected from clinically diagnosed abnormal records which likewise showed normal responses. The most frequently changed items were selected for the K scale. All of the selected items seemed to suggest an attitude of denying worries, inferiority feelings, and psychiatrically unhealthy symptoms. There was also a disposition to see only good in others as well as in one's self. The total effect of the K scale is that of being essentially a correction factor which is of value in sharpening the discriminatory power of the other scales.

A Social Introversion-Extroversion Scale has been developed by Drake[11] at the University of Wisconsin. The Minnesota T-S-E Inventory had been used as a measure of introversion-extroversion in the guidance program at the University of Wisconsin. An item analysis was made on M. M. P. I. responses of all students attaining centile ranks above sixty-five and of students attaining centile ranks below thirty-five on the T-S-E inventory. Items showing a difference between the percentage responses of the upper and lower groups of at least twice the standard error of the difference were selected for the M. M. P. I. Social I. E. Scale. The correlation between the Social I. E. Score derived from the M. M. P. I. with the Social I. E. Score derived from the Minnesota T-S-E is —.72. It is negative because on the M. M. P. I. a high score indicates introversion whereas on the Minnesota T-S-E introversion is indicated by a low score. Drake reports that Thinking and Emotional I. E. scales are being derived in the same way.

[7] P. E. Meehl and S. R. Hathaway, "The K Factor as a Suppressor Variable in the Minnesota Multiphasic Personality Inventory," *Journal of Applied Psychology*, Vol. 30 (1946), pp. 525–564.

[8] *Ibid.*

[9] Meehl and Hathaway, "The K Factor," *Journal of Applied Psychology*, Vol. 30 (1946), pp. 525–564.

[10] *Ibid.*

[11] L. E. Drake, "A Social I. E. Scale for the Minnesota Multiphasic Personality Inventory," *Journal of Applied Psychology*, Vol. 30 (1946), pp. 51–54.

Administration, Scoring and Interpretation.—After a box of cards has been categorized by a subject the problem of tabulating and scoring the responses remains. The procedure recommended by the publisher[12] involves individual scoring using transparent templates and individual score and profile sheets.[13] Since the M. M. P. I. is becoming increasingly useful as a screening device for psychological diagnosis or personnel selection the problem of recording and scoring tests rapidly is a serious one.

Manson and Grayson[14] proposed a punched card scoring system, which is similar to that used in classifying military personnel records. Burton and Bright[15] suggested supplanting the entire set of 550 cards with 550 specially punched I. B. M. cards. The subject sorts the cards in the conventional way and the tabulating is done by an I. B. M. machine. This plan has the additional advantage of eliminating almost all clerical errors.

Drake, at the University of Wisconsin Counseling Center, has all the significant responses recorded on an I. B. M. machine score sheet. This saves considerable time and labor in scoring.

The scores on the M. M. P. I. are reported in the form of a profile.[16] A raw score is secured by simply totaling responses. This is converted into standard score equivalents for each of the scales by use of tables which are found in the Manual for the M. M. P. I.[17] This standard score is known as the T score. The T score is based on the formula:

$$T = 50 + 10\,\frac{(X - M)}{\sigma}$$

where the mean of the normative group is assigned a value of fifty and the standard deviation is adjusted to ten. X is the raw score, M is the mean of the raw scores of the normative group and σ the standard deviation of that group.

Reliability and Validity.—The prevalent opinion is that subjective, structured, pencil and paper personality inventories are at best not to be relied upon to any great extent. However, the M. M. P. I. is recognized as being among the better available tests. This attitude is stated by Richards:[18]

> The Minnesota Scale is in our opinion the best of the exhaustive questionnaire type scales; it is that most readily used by the patient and most easily scored; it permits a focus clinically on those answers that are of most interest, i.e. the atypical answers. Moreover in clinical practice the qualitative examination of these atypical answers is of far greater utility than are the quantitative scores.

Ellis[19] in one of the recent reviews of the validation of personality inventories corroborated this view as follows:

> Judging from validity studies on group administered personality questionnaires thus far reported in the literature, there is at best one chance in two that these tests will discriminate between groups of adjusted and maladjusted persons and there is very little indication that they can be safely used to diagnose individual cases or give valid estimates of the personality traits of specific respondents. The older, more conventional, and more widely used forms of these tests seem to be for practical purposes, hardly worth the paper on which they are printed. . . . Among the newer questionnaires the M. M. P. I. appears to be the most promising, perhaps because it gets away from group administration which has hitherto been almost synonomous with personality testing.

Ellis[20] reported the following comparisons of the validity of various commonly used personality questionnaires.

[12] S. R. Hathaway and J. C. McKinley, *Manual for the Minnesota Multiphasic Personality Inventory.*

[13] See appendix for illustrations of score and profile sheets.

[14] M. P. Manson and H. M. Grayson, "Keysort Method of Scoring the Minnesota Multiphasic Inventory," *Journal of Applied Psychology*, Vol. 30 (1946), pp. 509–516.

[15] A. Burton and C. J. Bright, "Adaptation of the Minnesota Multiphasic Personality Inventory for Group Administration and Scoring," *Journal of Consulting Psychology*, Vol. 10 (1946), pp. 99–103.

[16] See appendix.

[17] Hathaway and McKinley, *op. cit.*, pp. 10–12.

[18] F. W. Richards, *Modern Clinical Psychology*, p. 144.

[19] A. Ellis, "The Validity of Personality Questionnaires," *Psychological Bulletin*, Vol. 43 (1946), pp. 385–340.

[20] *Ibid.*

Name of Test	No. Times Validated	No. of Positive Validations
1. Bell Adjustment Inventory	12	1
2. Bernreuter Personality Inventory	29	9
3. Thurstone Personality Schedule	10	4
4. Woodworth Personal Data Sheet	29	11
5. M.M.P.I.	15	10

Name of Test	No. of ? Validations	No. of Negative Validations
1. Bell Adjustment Inventory	0	11
2. Bernreuter Personality Inventory	6	14
3. Thurstone Personality Schedule	1	5
4. Woodworth Personal Data Sheet	4	14
5. M.M.P.I.	3	2

In commenting on the apparent superiority of the M. M. P. I. Ellis points out these factors.

1. Individual administration brings improved rapport similar to a case study interview.

2. It is standardized on a clinical and objective rather than on the usual subjective basis.

3. Most of the validity studies have been done on groups similar to those on which the test was standardized, which was an honest sophisticated, institutionalized abnormal, or else a military population with every incentive for honesty.

The usefulness of the M. M. P. I. is accented by Baker and Peatman[21] who, as a result of their questionnaire survey of tests used in veterans advisement units, found the M. M. P. I. was used more often than any other personality inventory. Of the advisement units responding seventy-seven per cent reported using it. The M. M. P. I. was used in personnel selection or advisement in the studies previously referred to by Lough, Verniaud, Harmon and Wiener, and Wiener.

The Strong Vocational Interest Blank.— The Strong Vocational Interest Blank was used as the interest measuring instrument in this investigation for two reasons. The occupational interests which it covers includes those under investigation in this study. Secondly, it has been used with college populations similar to that on which it was used in this study.

The Strong Interest Blank for Men was revised in 1938 and now consists of 400 items to which the person to be tested responds by indicating whether he likes, dislikes or is indifferent to the items.[22]

The Blank must be scored separately for each scale. If scores, for example are desired upon thirty occupations, it is necessary to score the blank thirty times. The length of time consumed in hand scoring is the chief handicap when using this Blank. The scoring was facilitated in this investigation by use of the Hankes Answer Sheet which permits rapid machine scoring.

Regarding the use of machine scoring with the Hankes procedure Strong comments,[23]

> The machine has been in operation since February, 1946, and has amply demonstrated its value both in markedly decreasing the labor and greatly reducing the cost of scoring the Strong Interest Blank.

At this point a question regarding our justification for the use of the Strong Vocational Interest Blank for Men might be raised. The Manual for the Strong Vocational Interest Blank for Men contains the criterion groups on which the Blank was standardized. In every case the group consisted of men actively engaged in the field. If similarity to the interests of these men is accepted as a criterion of interest in an area and interests are to be used as a basis for selection, then these interests are likely to be frozen at a certain level and improvement and change is impossible. It might be considered more advisable to standardize interests on what they should be rather than on what they are.

Since the mean raw scores for the criterion groups on which each scale is based vary considerably it is impossible to compare the

[21] G. Baker and J. G. Peatman, "Tests Used in Veterans Administration Advisement Units," *The American Psychologist*, Vol. 2 (1947), pp. 99–102.

[22] See Appendix for illustration of Strong Vocational Interest Blank.

[23] E. J. Hankes and E. K. Strong, Jr., "A Note on the Hankes Test Scoring Machine," *Journal of Applied Psychology*, Vol. 31 (1947), pp. 212–213.

scores on different scales until they have been changed into a common denominator, either a standard score, a rating, or a percentile rank. The Strong Vocational Interest Report Blank and the Hankes Report Form for the Strong Vocational Interest Blank provide a standard score. The standard score is a T score, and it is derived in the same way as the T score for the Minnesota Multiphasic Personality Inventory. The formula for the standard or T score is:

$$T = 50 + 10\frac{X - M}{\sigma}$$

in which the assumed mean is 50 and the standard deviation is ten. X is the raw score, M is the mean of the raw scores of the normative group and σ the standard deviation of that group.

To make the interpretation of a Strong Report Blank simply enough for those inexperienced in psychological and statistical techniques, ratings are assigned to each score. These ratings are A, B+, B, B—, C+, and C. The rating A means that the individual has the interests of persons engaged in that occupation. The rating C means that the person does not have such interests. The ratings B+, B, and B— mean that the person probably has those interests but we cannot be as sure of the fact as in the case of A ratings.

Several investigators have applied factor analysis to the vocations of the Strong Vocational Interest Blank. Thurstone[24] arrived at four factors after carrying out a multiple factor analysis on eighteen of Strong's occupations. These were scientific interests, language interests, business interests, and interest in people. The most thorough study of the intercorrelations of the occupations on the Strong Vocational Interest Blank was conducted by Strong himself. The resultant groups are those which appear on the report blank.[25]

The norms for each of the occupational scales are based on criterion groups which are found in the Manual for the Strong Vocational Interest Blank.[26]

The Strong Vocational Interest Blank for Men also has scales for the measurement of non-occupational interests. There are three of these scales: the Interest-Maturity, Masculinity-femininity, and Occupational Level.

According to the Manual[27] the Interest Maturity scale differentiates between the interests of fifteen and twenty-five year old men. The lower the Interest Maturity score of fifteen to eighteen year old men, the more likely it is that their occupational scores will change in the future.

The Masculinity-femininity scale measures the differences in interests between the two sexes. The lower the score the more feminine the interest, the higher the score the more masculine.

The occupational level scale measures differences in the interests of laboring men on one hand and business and professional people earning $2,500 or more on the other. Strong[28] reports that occupational groups range in score from sixty-four for lawyers to minus forty-four for unskilled workmen.

To summarize, the Strong Vocational Interest Blank for Men produces scores on thirty-nine occupational interest scales. These are broken down into eleven groups on the basis of their intercorrelations. In addition scores are reported on the non-occupational interest scales of Interest-Maturity, Occupational Level, and Masculinity-Femininity. This Blank was chosen for this study because the occupations covered are the same as those under study here and because it has been used successfully on college populations similar to the one used in this study.

Reliability and Validity.—According to the Manual[29] the "odds vs. evens" technique indicates a coefficient of reliability of .869. After a "test retest" interval of five years the coefficient of reliability was .75. This is a high coefficient with such a long interval between test and retest.

The Subjects Used in This Investigation

The subjects used in this investigation were 125 University of Wisconsin male students who were enrolled during the second semester of the 1946–1947 school term. Twenty-five each were selected from the School of Education, School of Law, School of Journalism, Medical School, and the College of Engineering.

[24] L. L. Thurstone, "A Multiple Factor Study of Vocational Interests," *Personnel Journal*, Vol. 10 (1931), p. 198.
[25] See Appendix for illustration of the report blank.
[26] E. K. Strong, Jr., *Manual for the Strong Vocational Interest Blank for Men*, pp. 4–7.
[27] *Ibid.*, p. 4.
[28] Strong, *Manual for the Strong Vocational Blank*, p. 4.
[29] Strong, *Manual for the Strong Vocational Blank*, p. 14.

The selections were made from populations consisting of students in each of the above schools. A random numbers procedure was used in making the selections.[30]

In selecting the Law group the population from which the sample was drawn consisted of all second and third year male law students. This comprised 124 persons and from this number the sample of twenty-five was drawn.

The Journalism group was selected from the roster of a course entitled "Relation of the Newspaper to Public Opinion, Government, and Society, Including Ethics and Psychology of Journalism." This is the only course required of all students majoring in Journalism. The total population consisted of 133 people of which sixty-nine were men. From among these sixty-nine men the sample of twenty-five was drawn.

The Mechanical Engineering group was chosen from the total of 178 senior mechanical engineering students.

The Medical group was drawn from among the group of third year male medical students.

The education group was selected from the list of eighty-eight senior men enrolled in the School of Education at the University of Wisconsin who were preparing for secondary school teaching.

The Plan of the Investigation and Statistical Analysis

Each subject was contacted personally and a time was arranged for him to complete the questionnaire and take the Minnesota Multiphasic Personality Inventory and the Strong Vocational Interest Blank.

The M. M. P. I. was scored on ten diagnostic scales.[31] It was also scored on the Question (?) Scale, the Lie (L) Scale, and the Validity (F) Scale. The K correction was applied which improved the validity of the entire record. The diagnostic scales which were scored were Hypochondriasis (H_s), Hypomania (M_a), Hysteria (H_y), Psychasthenia (P_t), Masculinity-Femininity (M_f), Paranoia (P_a), Depression (D), Psychopathic Deviate (P_d), Schizophrenia (S_c), and Social Introversion (S_i). Raw scores, T Scores, and profiles were secured on all subjects. Because of the necessity of comparing scores on the tests the T scores were used instead of the raw scores.

The T scores for the ten diagnostic scales for each student group were tabulated and a mean T score for each school was derived. From these mean T scores mean profiles were drawn.

In order to facilitate comparisons between schools a system of coding M. M. P. I. profiles was adopted. According to this system each diagnostic scale was given a serial number. If there were ten scales they were numbered from one to ten. A three by five inch card was used for each subject and the profile was coded on it. The number of the highest elevation on the profile was recorded first. If this number was above a T score of 70 a prime was placed after it. All other elevations higher than 54 were recorded by number. No elevations between forty-six and fifty-four were coded. These were assumed to be at the norm. Next a dash (—) was placed and the numbers of the two lowest scales were coded. The advantage of this system is that similar profiles can be easily sorted and grouped. Profiles can be easily compared without handling a great deal of paper. In the illustration (Fig. 1) the card informs one that this subject had an elevation above seventy on scale number five and also had peaks above the norm on scales six, two, and nine. The two scales below the norm were one and seven.

Name: Doe, John
School: Education

$5^{1}629–17$

Fig. 1.

The percentage of students in each school exceeding the norm was secured by means of the coded cards. These percentages were tabulated and are graphically presented in Table XXXVIII.

The Strong Vocational Interest Blanks for Men were responded to by means of the Hankes Answer Sheet and were machine scored. Since the scores were to be compared

[30] E. F. Lindquist, *Statistical Analysis in Educational Research*, pp. 262–264.

[31] The writer is indebted to Dr. L. E. Drake for the use of the test scoring facilities of the University of Wisconsin Student Counseling Center in scoring the M. M. P. I.

it was necessary to resort to the use of standard scores which are indicated directly on the report blank. These are derived in exactly the same way as were the T scores on the M. M. P. I. The scores used in this investigation were the average of the standard scores in each of the groups which are shown on the report blank. These group average scores were tabulated by schools. The tabulations are presented in Table XL. The standard scores on the three non-occupational scales were also determined. These are presented in Table XXXIX.

The Pearson Product-Moment Coefficient of Correlation was used to express the amount of relationship between the personality traits of the M. M. P. I. and the average group scores on the Strong Vocational Interest Blank. In view of the large number of cases involved in this study it was advisable to follow the formula in raw score form rather than in the conventional deviation form.[32]

The correlations between personality traits on the M. M. P. I. and occupational interests on the Strong Vocational Interest Blank are tabulated on Table II. Since magnitude of a correlation coefficient is not of itself a criterion of significance it was necessary to refer to tables which Lindquist[33] has provided which indicate the correlation coefficients required for significance at the five per cent and one per cent levels for samples of various sizes.

The technique of analysis of variance was employed to test the hypothesis that differences existed in the personalities and interests of the students enrolled in various professional schools to an extent greater than could be attributable to chance. Statistically it involved proving or refuting the "null hypothesis" which states that differences as great as those observed could have been due to chance factors resulting from the sampling technique employed.

The significance of various values of F was determined by reference to tables provided by Snedecor.[34] If a significant F ratio was obtained the "null hypothesis" was refuted and apparently the differences in means between the groups could not have been obtained by fluctuations of the sampling procedure employed.

The F ratios which evaluate inter-group differences in this study are presented in Tables XIII thru XXXVI. In each case the source of variation, the sum of squares resulting from squaring variations, the degrees of freedom, and the mean squares resulting from the division of the sums of squares by the degrees of freedom are also tabulated.

In commenting on the place of analysis of variance in research Peters and Van Voohis[35] state that "analysis of variance belongs as a first step in a major research where one wishes to make a rough preliminary test of his hypothesis in advance of going to the expense of the elaborate setup needed for a thorough investigation."

The device is useful because it permits a prior survey of the significance of possible differences among a number of variables. By simultaneously evaluating differences among these variables it permits fewer computations and saves considerable time. If significant differences between groups are found these can be analyzed to their nature and intensity by referring to the tabulations of the data concerned.

SECTION IV

The Findings and Their Interpretation

The Findings Regarding Comparisons of Personal and Environmental Factors.—As a background for the comparison of personality and interest factors which follow it is desirable to note certain comparisons of personal and environmental qualities. These include physical factors as height, weight, and age. The environmental factors compared are size of family, occupation of father, size of community where reared, and source of interest in the profession being prepared for. This data was gathered by means of a short seventeen item questionnaire which was responded to by the selected sample.

The ages of the students are tabulated by schools and reported in Table III. This table contains the age range and also the mean age of each school. It is interesting to note the wide range in the ages of the various student groups. This range which averages 11.4 years perhaps reflects the disruption of education

[32] H. E. Garrett, *Statistics in Psychology and Education*, p. 292.

[33] E. F. Lindquist, *op. cit.*, p. 212.

[34] G. W. Snedecor, *Statistical Methods*, pp. 222–225.

[35] C. C. Peters and W. R. Van Voorhis, *Statistical Procedures and Their Mathematical Bases*, p. 357.

TABLE II

CORRELATIONS BETWEEN SCORES ON DIAGNOSTIC SCALES ON THE M. M. P. I. AND OCCUPATIONAL INTERESTS ON THE STRONG VOCATIONAL INTEREST BLANK

Diagnostic Scale on M.M.P.I. / Occupational Groups	Hypochandriasis	Hypomania	Hysteria	Psychasthenia	Masculinity—Femininity	Paranoia	Depression	Psychopathic Deviate	Schizophrenia	Social Introversion—Extroversion
I	.071	.020	.010	.122	.410**	.019	.128	.080	.201*	.164
II	.012	.011	.133	.107	.392**	.022	.276**	.044	.065	.267**
III	.122	.173	.069	.098	.450**	.065	.163	.046	.212*	.123
IV	.050	.129	.031	.074	.228*	.112	.209*	.075	.050	.287**
V	.051	.052	.043	.094	.097	.168	.232*	.054	.026	.253**
VI	.091	.067	.033	.201*	.568**	.055	.125	.119	.172	.127
VII	.033	.148	.069	.008	.390*	.011	.024	.118	.013	.082
VIII	.158	.004	.081	.148	.071	.071	.048	.075	.281**	.101
IX	.109	.003	.009	.132	.110	.127	.207*	.000	.031	.264**
X	.170	.049	.017	.124	.452**	.117	.134	.081	.239*	.142
XI	.005	.142	.104	.201*	.274**	.115	.046	.029	.098	.126

*Indicates significance at 5% level

**Indicates significance at 1% level

TABLE III

COMPARISON OF THE AGE RANGE AND AVERAGE AGE OF THE STUDENT GROUPS

	SCHOOL				
	Education	Mechanical Engineering	Medicine	Journalism	Law
Age Range	24–37	20–31	21–31	22–32	22–35
Mean Age	26.1	23.3	23.2	27.2	26

Mean Range = 11.4 Mean Age of Entire Group = 25.1

TABLE IV

COMPARISON BY SCHOOLS OF AVERAGE HEIGHT AND WEIGHT OF THE STUDENT GROUPS

	SCHOOL				
	Education	Mechanical Engineering	Medicine	Journalism	Law
Height in inches	70.01″	69.14″	70.9″	69.04″	69.16″
Weight in pounds	168.11	156.7	162.3	161.12	173.18

programs due to military service. The group with the oldest mean age is the journalism group which averaged 27.2 years, and the youngest group is the medical group which averaged 23.2 years. The mean age of the education group is 26.1 years.

There are no significant differences between the groups regarding the physical qualities of height and weight (Table IV). The average height of the education students was 70.01 inches. The averages of the four other student groups was within one inch of this. The average weight of the education group was 168.11 pounds. The heaviest group was the law group and the lightest the mechanical engineering. The mean weight of the law students was 173.18 pounds; that of the mechanical engineers was 156.7 pounds.

Differences in the size of communities where the students in the various schools spent their childhood and youth is reported in Table V. There is a tendency for education and medical students to come from communities with populations of less than five thousand people. Mechanical engineering students tend to be from medium sized cities. Journalism students seemed to come from cities exceeding 100,000 in population. There are no clear tendencies for law students.

The number from each school who come from families with more than three children and the number who come from families with

TABLE V

COMPARISON BY SCHOOLS OF THE SIZE OF COMMUNITIES FROM WHICH THE STUDENT GROUPS COME

	SCHOOL				
Population of Community	Education	Mechanical Engineering	Medicine	Journalism	Law
5,000 or less	9	1	10	5	8
5,000 to 20,000	5	5	3	3	2
20,000 to 100,000	4	12	4	2	8
More than 100,000	6	4	4	9	2
No response	1	3	4	6	5
N =	25	25	25	25	25

TABLE VI

COMPARISON BY SCHOOLS OF THE SIZE OF FAMILIES FROM WHICH THE STUDENT GROUPS COME

	SCHOOL				
	Education	Mechanical Engineering	Medicine	Journalism	Law
More than three children	8	4	8	10	7
Less than three children	16	18	13	9	13
No response	1	3	4	6	5
N =	25	25	25	25	25

TABLE VII

COMPARISON BY SCHOOLS OF THE OCCUPATIONS OF THE FATHERS OF THE STUDENT GROUPS

Occupation of Father	SCHOOL				
	Education	Mechanical Engineering	Medicine	Journalism	Law
Professional	6	2	8	4	6
Trades, Farm, or General Labor	9	9	5	7	3
Business or Management	9	11	8	8	11
No Response	1	3	4	6	5
N =	25	25	25	25	25

less than three children is shown in Table VI. There appears to be a tendency in all the groups to come from families with less than three children. Journalism, medicine, and education students seem to come from slightly larger families than law and mechanical engineering students.

Table VII shows the occupations followed by the fathers of the students in the various groups. It appears that the parental occupations of business and management tends to predominate in each of the schools studied. The differences, however, are not great.

In every group the students rate their own health as being mainly good or very good. This information is contained in Table VIII.

In comparing the groups on Table IX regarding the source of their interest in the profession for which they are training, it is interesting to note that over three-fourths credit general interest in the profession for their being in it. Breaking the reasons down by schools it is noted that education is the only group in which a teacher's influence affected the choice of vocation to any extent. In this group about one-fifth listed this as an important factor. Of all the students studied only four credited guidance and counseling in high school or college with any influence on their choice of profession.

In general, there are no definite differences among the students in the various profes-

TABLE VIII

COMPARISON BY SCHOOLS OF STUDENT'S RATINGS OF THEIR OWN HEALTH

Rating	SCHOOL				
	Education	Mechanical Engineering	Medicine	Journalism	Law
Very good	18	14	16	10	11
Good	6	5	4	8	7
Fair	0	1	1	1	2
Poor	0	0	0	0	0
Very Poor	0	0	0	0	0
No Response	1	5	4	6	5
N =	25	25	25	25	25

TABLE IX

COMPARISON OF STUDENTS' ESTIMATION OF THE SOURCE OF THEIR INTEREST IN THE PROFESSION THEY ARE PREPARING FOR

Source of Interest	SCHOOL				
	Education	Mechanical Engineering	Medicine	Journalism	Law
Parents	3	3	3	1	3
Friends	2	1	0	1	2
General Interest	12	17	18	16	15
Influence of Teacher in High School or College	5	0	0	0	0
Formal Guidance in High School or College	2	1	0	1	0
No Response	1	3	4	6	5
N =	25	25	25	25	25

sional schools regarding personal, physical, and environmental factors.

Findings Regarding Correlations Between Personality Traits and Interest Scores.—Some correlations were found which were significant at the five per cent level and others at the one per cent level. Table X is a tabulation of significant correlations taken from Table II. This table indicates the personality traits, the interest group with which they correlate and the level of significance.

A significant correlation exists between psychasthenia and Group VI and Group XI on the Strong Inventory. Group VI consists of only one occupation, that of musician. Group XI also consists of only one occupa-

TABLE X

SIGNIFICANT CORRELATIONS BETWEEN DIAGNOSTIC SCALES ON THE M. M. P. I. AND OCCUPATIONAL SCALES ON THE STRONG VOCATIONAL INTEREST BLANK FOR MEN

M.M.P.I.	Strong	r	Level of Significance
Psychasthenia	Group VI (Musician)	.201	5%
	Group XI (President—Mfg. Concern)	.201	5%
Masculinity—femininity	Group I (Artist, Psychologist, Architect, Physician, Osteopath, Dentist)	.410	1%
	Group II (Mathematician, Physicist, Engineer, Chemist)	.392	1%
	Group III (Production Manager)	.450	1%
	Group IV (Farmer, Aviator, Carpenter, Printer, Math. Physics. H. S. Teacher, Policeman, Forest Service Man)	.228	5%
	Group VI (Musician)	.568	1%
	Group VII (C.P.A.)	.390	1%
	Group X (Advertising Man, Lawyer, Journalist)	.452	1%
	Group XI (President Mfg. Concern)	.274	1%
Depression	Group II (Mathematician, Physicist, Engineer, Chemist)	.276	1%
	Group IV (Farmer, Aviator, Carpenter, Printer, Math. Physics Sec. Teacher, Policeman, Forest Service Man)	.209	5%
	Group IX (Sales Manager, Real Estate Salesman, Life Ins. Salesman)	—.207	5%
Schizophrenia	Group I (Artist, Psychologist, Architect, Physician, Osteopath, Dentist)	.201	5%
	Group III (Production Manager)	.212	5%
	Group VIII (Accountant, Office Man, Purchasing Agent, Banker, Mortician)	—.281	1%
Social Introversion—Extroversion	Group II (Mathematician, Physicist, Engineer, Chemist)	.267	1%
	Group IV (Farmer, Aviator, Carpenter, Printer, Math. Physics, Science Teacher, Policeman, Forest Service Man)	.287	1%
	Group V (YMCA Physical Director, Personnel Director, Public Administrator, YMCA Secretary, Soc. Sci. H.S. Teacher, City School Superintendent, Minister)	—.253	1%
	Group IX (Sales Manager, Real Estate Salesman, Life Insurance Salesman)	—.264	—1%

tion, that of President, Manufacturing Concern. The correlations are not large, but they are both significant at the five per cent level. According to the Manual for the Minnesota Multiphasic Personality Inventory[1] the Psychasthenia scale measures the similarity of the subjects to psychiatric patients who are troubled by phobias or compulsive behavior. A correlation between elevations on the psychasthenia scale and the interest scores of persons having interests similar to those of musicians or presidents of manufacturing concerns indicates a tendency for these occupational groups to possess phobias and to display compulsive behavior. Even though the correlation is significant it is quite small and therefore should be interpreted as a slight group tendency. It should not be construed as being predictive or diagnostic when applied to an individual case.

The scale on the M. M. P. I. which measures the tendency toward masculine or feminine interest patterns correlates significantly with eight of the groups on the Strong Inventory. These include Group I, Group II, Group III, Group IV, Group VI, Group VII, Group X, and Group XI.

A high score on the masculinity-femininity scale of the M. M. P. I. indicates a tendency to possess the interest patterns of the opposite sex. Since this study was confined only to men it appears that college trained men in general have a tendency toward feminine interests. It is interesting to note the three groups which do not correlate significantly with this scale. These are Group V including the occupations of Y. M. C. A. physical director, personnel director, public administrator, Y. M. C. A. secretary, high school social science teacher, city school superintendent, and minister; Group VIII including accountant, office man, purchasing agent, banker, and mortician; and Group IX including sales manager, real estate salesman, and life insurance salesman. It should be noted that these three groups deal essentially with people. The groups which correlate significantly with masculinity-femininity deal essentially with things. This seems to support the conclusion reached by Strong[2] that "In general, occupations dealing with objects including office records, score masculine while occupations dealing with people and with artistic, musical, and linguistic activities score feminine."

Depression correlates significantly with three groups. These are Group II (Mathematician, physicist, engineer, and chemist); Group IV (farmer, aviator, carpenter, printer, mathematics, —physics,— science teacher, policeman, and forest service man); and Group IX (sales manager, real estate salesman, and life insurance salesman). The Manual for the Minnesota Multiphasic Personality Inventory[3] describes a high depression score as indicating poor morale of the emotional type with a feeling of uselessness and inability to assume a normal optimism regarding the future.

These correlations are especially interesting in connection with Group IX where a significant negative correlation appears. Apparently, men with a high interest score in selling occupations do not tend to be depressed as do some of the other occupations.

Schizophrenia correlates significantly with three groups. These are Group I (artist, psychologist, architect, physician, osteopath, and dentist); Group III (production manager); and Group VIII (accountant, office man, purchasing agent, banker, and mortician). The positive correlations are rather low which reduces their applicability to individual cases. The label of schizophrenia for this trait is unfortunate because of the connotations people usually associate with that term. The authors of the Minnesota Multiphasic Inventory[4] describe a high score on the schizophrenia scale as indicative of bizarre and unusual thoughts and behavior. Apparently those who score high on the occupations in Group VIII do not exhibit schizophrenic symptoms. This is indicated by the significant negative correlation.

Social Introversion-Extroversion correlates significantly with four of the Strong Groups. These are Group II (mathematician, physicist, engineer, and chemist); Group IV (farmer, aviator, carpenter, printer, mathematics—physics—science teacher, policeman, and forest service man); Group V (YMCA physical director, personnel director, public administrator, YMCA secretary, social science high school teacher, city school superintendent, and minister); and Group IX (sales manager, real estate salesman and life insurance salesman).

[1] S. R. Hathaway and J. C. McKinley, *op. cit.*, p. 6.
[2] E. K. Strong, Jr., *op. cit.*, p. 234.
[3] S. R. Hathaway and J. C. McKinley, *op. cit.*, p. 4.
[4] S. R. Hathaway and J. C. McKinley, *op. cit.*, p. 6.

According to Drake[5] who derived this scale a high score indicates introversion. Apparently those occupations in Group II and Group IV have a tendency to attract personnel with introvertive characteristics. These occupations are those which deal mainly with things. Group V and Group IX, on the other hand, have significant negative correlations. This indicates that those scoring high on introversion do not have intense interests in these occupations. It will be observed that the occupations in these groups are those involving social service or selling. These usually do not attract people with introvertive characteristics.

scale. On the M. M. P. I. a high score in this trait indicates femininity. On the Strong Blank a low score indicates femininity. Substantial agreement between the two scales is indicated by the correlation of —.292 which is significant at the one per cent level. Darley[7] defines the masculinity-femininity scale as "a continuum based on the extent to which the individuals attention is held by technical, depersonalized, manipulative, concrete activities or objects in his environment (masculinity), or by cultural, aesthetic personalized, symbolic, appreciative activities or objects in the environment (femininity)."

TABLE XI

CORRELATIONS BETWEEN DIAGNOSTIC SCALES ON THE M. M. P. I. AND THE NON-OCCUPATIONAL SCALES ON THE STRONG VOCATIONAL INTEREST BLANK

M.M.P.I. Scale	Non-Occupational Scale		
	Occupational Level	Interest Maturity	Masculinity—Femininity
Hypochondriasis	—.002	—.051	—.067
Hypomania	—.112	—.101	.028
Hysteria	.067	.024	.001
Psychasthenia	—.057	—.182*	—.089
Masculinity—Femininity	.032	.029	—.292**
Paranoia	—.176*	.014	.039
Depression	—.110	—.016	.070
Psychopathic Deviate	.054	—.098	—.054
Schizophrenia	.002	—.133	—.222
Social Introversion	—.146	—.020	.071

*Indicates significance at 5% level.
**Indicates significance at 1% level.

Table XI indicates significant correlation between the non-occupational scales and certain of the personality traits. One of the non-occupational scales on the Strong Blank is that for interest maturity. Darley[6] identifies interest maturity as "a characteristic of the well organized, socially sensitive, generally mature, tolerant, insightful individual." Psychasthenia correlates with interest maturity —.182 which is significant at the five per cent level. Since psychasthenia is characterized by fears, phobias, and compulsive behavior, it is hardly likely that persons scoring high on this trait would exhibit the desirable personality qualities exemplified by interest maturity. This may account for the negative correlation.

An interesting coincidence is the fact that both the Strong Interest Blank and the M. M. P. I. report scores on a masculinity-femininity

Apparently this scale which appears on each test measures about the same thing.

Another significant correlation is that between paranoia on the M. M. P. I. and the occupational level scale on the Strong Vocational Interest Blank. This correlation is —.176 and is significant at the five per cent level. Paranoia is characterized by suspiciousness, over-sensitivity, and delusions of persecution. Occupational level is a non-occupational scale described by Darley[8] as being a "statement of the eventual adult level of aspiration" which represents the degree to which the individual's total background has prepared him to seek the prestige and discharge the social responsibilities growing out of high income, professional status, recognition, or leadership in the community; at the lower end of the scale the individual's background has prepared him for the anonymity,

[5] L. E. Drake, *op. cit.*, p. 53.
[6] J. G. Darley, *Clinical Aspects and Interpretations of the Strong Vocational Interest Blank*, p. 60.
[7] Darley, *op. cit.*, p. 59.
[8] *Ibid.*, p. 60.

TABLE XII

CORRELATIONS BETWEEN NON-OCCUPATIONAL INTEREST SCORES ON THE STRONG VOCATIONAL INTEREST BLANK AND OCCUPATIONAL INTEREST SCORES ON THAT BLANK

Occupational Group Scales	Non-Occupational Interest Scales		
	Occupational Level	Interest Maturity	Masculinity—Femininity
Group I	—.116	—.388**	.105
II	—.220*	—.265**	.386**
III	.296**	.163	.572**
IV	—.737**	.049	.620**
V	.176*	.553**	—.211*
VI	—.293**	—.128	—.218*
VII	.400**	—.031	—.355**
VIII	—.128	.398**	.079
IX	.417**	.063	—.376**
X	.598**	—.307**	—.651**
XI	.565**	.208*	—.004

*Indicates significance at 5% level.
**Indicates significance at 1% level.

the mundane round of activities and the "followership status" of a great majority of the population. There seems to be a tendency for those having worries and undue suspiciousness to have a lower occupational level. This is evidenced by the small, but significant, negative correlation.

It is apparent from Table XII that there are significant correlations between non-occupational scales and the occupational groups on the Strong Blank. Occupational level correlates significantly positive with Group III (production manager), Group V (social service), Group VII (C. P. A.), Group IX (selling), Group X (advertising, etc.), and Group XI (President, manufacturing concern). Negative significant correlations are indicated between occupational level and Group IV (farmer, aviator, etc.), and Group VI (musician). These findings are in substantial agreement with those of Strong[9] who also found, that it is occupational Group VII (C. P. A.), IX (sales), X (advertising, etc.), and XI (president) that correlate high and Groups IV (farmers, etc.) and VI (musician) that correlate low with occupational level. Apparently those with a high occupational level enter those occupations which promise to satisfy their higher level of aspiration in terms of earning power, prestige, recognition, and leadership. There is a tendency for the reverse to be true for those whose occupational level score tends to be low.

Interest maturity correlates significantly with six of the occupational groups. There is a significant negative correlation with Group I (artist, physician, etc.), with Group II (mathematician, physicist, etc.), and with Group X (advertising man, lawyer, etc.). A significant positive correlation exists with Group V (social service), with Group VIII (office work) and with Group XI (President). These findings correspond with those of Strong[10] who likewise found negative correlations with Groups I, II, and XI and positive correlations with Groups V and VIII.

There seems to be a tendency for men in occupations dealing mainly with people to possess a greater maturity of interests than men in occupations dealing mainly with ideas, words, or objects. These latter may constitute a group of short term interests which are more subject to change than are the others.

The Masculinity-femininity scale on the Strong Blank correlates significantly with the majority of the eleven group scales on the Strong Blank.

The following groups correlate positively at the one per cent level: Group II (mathematician, physicist, etc.), Group III (production manager), and Group IV (farmer, aviator, carpenter, etc.). The following groups correlate negatively at the one per cent level: Group VII (accountant, office man, etc.), Group IX (sales manager, etc.), and Group X (advertising man, lawyer, etc.). Group VI (musician) correlates negatively at the five per cent level.

These findings are in substantial agreement with those of Strong.[11] They seem to

[9] E. K. Strong, Jr., *op. cit.*, p. 191.

[10] E. K. Strong, Jr., *op. cit.*, p. 324.

[11] E. K. Strong, Jr., *op. cit.*, p. 234.

indicate that occupational groups dealing in the main with people, either social service or personal service, tend to be more feminine in interests than are groups dealing with ideas, words, or objects. It will be remembered that on the Strong Blank a feminine interest tendency is evidenced by a low score, a masculine tendency by a high one.

The correlations just reviewed permit of only the most cautious generalization. The magnitude of the majority of them is small. Of the total of 173 correlations only forty-four were significant at the five per cent or one per cent levels. In nearly all cases the correlations are too small to be used for predictive purposes in individual cases. They are, however, indicative of certain group tendencies and as such the correlations do have value.

The group enrolled in the school of education does not seem to have a clear cut interest pattern distinguishing it from that of the other professional schools. This is in accord with the finding reported by Strong,[12] who comments:

> The theory upheld by most departments of education that all teachers should be interested in teaching young people first and only secondarily interested in their subject matter may possibly be a worthy ideal. But the facts are that these two types of men teachers have quite different interests. The correlation between their interests is only .13. Mathematics, physics, science teachers correlate .49 with masculinity-femininity and the social science high school teacher correlates —.40 with this trait.

[12] E. K. Strong, Jr., *op. cit.*, p. 161.

Reference to Table XII in this study reveals essentially the same thing with a correlation between masculinity-femininity and Group IV (mathematics, physics, science teacher) of .620. The correlation with Group V (social science high school teacher) is —.211. This in turn raises the question as to the existence of a teaching profession as such. The above data indicates that on the secondary level at least there are sharp differences in the interests of various subject matter teachers. Any unity of interest which their common participation in teaching should include is not revealed.

Interpretation of Analysis of Variance Differences

An evaluation of the differences between schools is contained in Tables XIII through XXXVI. Tables XIII through XXII evaluate the differences existing in regard to the ten diagnostic scales of the M. M. P. I. Tables XXIII through XXV evaluate the differences regarding the non-occupational scales of the Strong Vocational Interest Blank. Tables XXVI through XXXVI evaluate the differences in regard to the eleven occupational group scales on the Strong Vocational Interest Blank.

Table XV indicates a significant difference between the schools in regard to the trait of hysteria. Since this table does not indicate which school is high and which is low on this trait, it is necessary to refer to Table XXXVII which contains the average T scores on the different scales by schools. Education ranks the lowest with a mean T score of only 51.5 on hysteria. Mechanical engineering is

Table XIII

Analysis of Variance Concerning Hypochondriasis

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	9.072	4	2.268	.991
Within Schools	274.640	120	2.289	------

Table XIV

Analysis of Variance Concerning Hypomania

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	29.152	4	7.288	2.016
Within Schools	433.762	120	3.615	------

TABLE XV

ANALYSIS OF VARIANCE CONCERNING HYSTERIA

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	18.512	4	4.628	3.138*
Within Schools	177.040	120	1.475	------

Note: *Indicates significance at 5% level.
**Indicates significance at 1% level.
***Indicates significance at .5% level.
****Indicates significance at .1% level.

TABLE XVI

ANALYSIS OF VARIANCE CONCERNING PSYCHASTHENIA

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	6.632	4	.908	.238
Within Schools	458.800	120	3.823	------

TABLE XVII

ANALYSIS OF VARIANCE CONCERNING MASCULINITY-FEMININITY

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	28.752	4	7.188	2.105
Within Schools	408.680	120	3.414	------

TABLE XVIII

ANALYSIS OF VARIANCE CONCERNING PARANOIA

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	16.592	4	4.148	1.461
Within Schools	340.720	120	2.839	------

TABLE XIX

ANALYSIS OF VARIANCE CONCERNING DEPRESSION

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	15.152	4	3.788	1.557
Within Schools	291.920	120	2.433	------

TABLE XX

ANALYSIS OF VARIANCE CONCERNING PSYCHOPATHIC DEVIATE

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	1.392	4	.348	.101
Within Schools	258.800	120	2.157	------

TABLE XXI

ANALYSIS OF VARIANCE CONCERNING SCHIZOPHRENIA

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	32.880	4	8.22	3.027*
Within Schools	325.92	120	2.716	------

TABLE XXII

ANALYSIS OF VARIANCE CONCERNING SOCIAL INTROVERSION-EXTROVERSION

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	27.635	4	6.909	3.005*
Within Schools	273.558	120	2.299	------

TABLE XXIII

ANALYSIS OF VARIANCE CONCERNING OCCUPATIONAL LEVEL ON THE STRONG VOCATIONAL INTEREST BLANK

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	33.840	4	8.460	------
Within Schools	168.160	120	1.401	6.039****

TABLE XXIV

ANALYSIS OF VARIANCE CONCERNING INTEREST MATURITY ON THE STRONG VOCATIONAL INTEREST BLANK

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	34.928	4	8.732	4.647***
Within Schools	225.520	120	1.879	------

TABLE XXV

ANALYSIS OF VARIANCE CONCERNING MASCULINITY-FEMININITY ON THE STRONG VOCATIONAL INTEREST BLANK

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	91.040	4	22.760	6.645****
Within Schools	410.960	120	3.425	------

TABLE XXVI

ANALYSIS OF VARIANCE CONCERNING GROUP I ON THE STRONG INTEREST BLANK

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	207.68	4	51.920	19.223****
Within Schools	324.120	120	2.701	------

TABLE XXVII

ANALYSIS OF VARIANCE CONCERNING GROUP II ON THE STRONG INTEREST BLANK

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	357.088	4	89.272	20.161****
Within Schools	531.360	120	4.428	------

TABLE XXVIII

ANALYSIS OF VARIANCE CONCERNING GROUP III ON THE STRONG VOCATIONAL INTEREST BLANK

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	176.432	4	44.108	12.256****
Within Schools	431.840	120	3.599	------

TABLE XXIX

ANALYSIS OF VARIANCE CONCERNING GROUP IV ON THE STRONG VOCATIONAL INTEREST BLANK

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	151.088	4	37.772	12.914****
Within Schools	351.04	120	2.925	------

TABLE XXX

ANALYSIS OF VARIANCE CONCERNING GROUP V ON THE STRONG VOCATIONAL INTEREST BLANK

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	68.912	4	17.228	5.314****
Within Schools	389.040	120	3.244	------

TABLE XXXI

ANALYSIS OF VARIANCE CONCERNING GROUP VI ON THE STRONG VOCATIONAL INTEREST BLANK

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	164.048	4	41.012	9.783****
Within Schools	503.040	120	4.192	------

TABLE XXXII

ANALYSIS OF VARIANCE CONCERNING GROUP VII ON THE STRONG VOCATIONAL INTEREST BLANK

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	67.088	4	16.772	5.856****
Within Schools	343.680	120	2.864	------

TABLE XXXIII

ANALYSIS OF VARIANCE CONCERNING GROUP VIII ON THE STRONG VOCATIONAL INTEREST BLANK

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	50.288	4	12.572	5.106****
Within Schools	295.440	120	2.462	------

TABLE XXXIV

ANALYSIS OF VARIANCE CONCERNING GROUP IX ON THE STRONG VOCATIONAL INTEREST BLANK

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	158.912	4	39.728	11.964****
Within Schools	412.560	120	3.438	------

TABLE XXXV

ANALYSIS OF VARIANCE CONCERNING GROUP X ON THE STRONG VOCATIONAL INTEREST BLANK

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	121.792	4	30.448	11.964****
Within Schools	305.440	120	2.545	------

TABLE XXXVI

ANALYSIS OF VARIANCE CONCERNING GROUP XI ON THE STRONG VOCATIONAL INTEREST BLANK

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Schools	39.728	4	9.932	3.033*
Within Schools	353.280	120	3.275	------

TABLE XXXVII

MEAN T SCORES ON DIAGNOSTIC SCALES OF M. M. P. I. TABULATED BY SCHOOLS

	Schools				
M.M.P.I. Scale	Education	Mechanical Engineering	Journalism	Medical	Law
Hypochondriasis	45.9	46.4	49.2	50	49
Hypomania	55.1	54	49.2	49.5	52.1
Hysteria	51.5	56.8	54	54.9	55.4
Psychasthenia	48.9	47.2	48.4	50.3	47.3
Masculinity—femininity	57.7	61.6	59.6	58.7	55.2
Paranoia	51.1	54.9	51.4	49.9	51.2
Depression	51.5	53.2	51.2	50.8	47.8
Psychopathic Deviate	48.7	51	50	51.4	49.5
Schizophrenia	49.7	44.8	49.5	52.8	46.8
Social Introversion—Extroversion	44.7	46.2	41.7	43.4	41.4

highest with a mean T score of 56.8. The other scores range between these extremes. According to the Manual for the Minnesota Multiphasic Personality Inventory[18] a high score on hysteria indicates the similarity of the subjects to people who have developed conversion type hysteria symptoms. These are paralysis, cramps, and various intestinal and cardiac complaints. Apparently education students do not have these symptoms to any great extent.

This same information is brought out in Table XXXVIII in which comparisons are made of the per cent of students in each school who score above the mean on any scale. It will be noted that a smaller per cent of education students score above the mean on hysteria than do those of any other school.

Significant differences appear on Table XXI in which differences between schools regarding schizophrenia are evaluated. Reference to Table XXXVII shows that this difference ranges from a low mean T score of 44.8 for mechanical engineering students to a high of 52.8 for medical students. Education students achieved a mean T score of 49.7 which is below the norm for the group on which the test was standardized.

Apparently medical students have a slight tendency toward schizophrenia and mechanical engineering students do not show this tendency. The same data is presented graphically in Table XXXVIII which indicates that the norm on schizophrenia is exceeded by only sixteen per cent of the mechanical engineering students and by fifty-two per cent of the medical students.

A third diagnostic scale on which significant differences appeared was social introversion-extroversion. This difference is evaluated in Table XXII. Reference to Table XXXVII indicates that the group scoring highest on this trait, indicating the strongest tendencies toward introversion, were the mechanical engineers. The lowest scoring group, apparently the most extroverted, was the law group. The education group ranked close behind the mechanical engineering group as far as introversion is concerned. Apparently

[18] S. R. Hathaway and J. C. McKinley, *op. cit.*, p. 5.

mechanical engineering and education attract people with introspective, ego centered type of personality to a greater degree than does law or journalism.

Tables XXII, XXIII and XXV evaluate the differences existing between schools on the non-occupational scales of occupational level, interest maturity, and masculinity-femininity respectively. It should be noted that exceedingly significant differences appear. The differences on occupational level and masculinity-femininity are significant at the one-tenth of one per cent level and those on interest-maturity at the five-tenths of one per cent level.

Table XXIII evaluates the differences in occupational level and Table XXXIX contains the mean standard scores by schools so comparisons can be made. It is apparent that law has the highest standard score. Mechanical engineering has the lowest score and education ranks only a little better. This finding

TABLE XXXVIII

COMPARISON OF PER CENT FROM EACH SCHOOL SCORING ABOVE MEAN ON M. M. P. I. SCALES

M.M.P.I. Scale	50	Percent
Hypochondriasis		
Education	—	4
Journalism	———	20
Law	———	16
Mechanical Engineering	—	8
Medicine	———	16
Hypomania		
Education	———————	52
Journalism	———	24
Law	———	32
Mechanical Engineering	———————	48
Medicine	———	28
Hysteria		
Education	———————	32
Journalism	———————	56
Law	———————	68
Mechanical Engineering	———————	60
Medicine	———————	48
Psychasthenia		
Education	———	16
Journalism	——	12
Law	———	28
Mechanical Engineering	———	28
Medicine	———	28
Masculinity—Femininity		
Education	———————	68
Journalism	———————	68
Law	———————	60
Mechanical Engineering	———————	80
Medicine	———————	60
Paranoia		
Education	———	32
Journalism	———	32
Law	———	32
Mechanical Engineering	———	48
Medicine	———	24
Depression		
Education	———	44
Journalism	———	32
Law	———	32
Mechanical Engineering	———	40
Medicine	———	28

TABLE XXXVIII—Continued

M.P.I. Scale	50	Percent
Psychopathic Deviate		
Education	———	24
Journalism	———	20
Law	———	28
Mechanical Engineering	———	40
Medicine	———	32
Schizophrenia		
Education	———	36
Journalism	———	24
Law	———	44
Mechanical Engineering	———	16
Medicine	———	52
Social Introversion—Extroversion		
Education	——	12
Journalism	—	4
Law	—	4
Mechanical Engineering	——	12
Medicine	—	4

agrees with that of Strong[14] who likewise found the law group to have the highest occupational level, followed by medicine, journalism, and education. Apparently there is a tendency for law and medical students to have a higher "level of aspiration" regarding living standards, income, and prestige than mechanical engineering, journalism, and education students.

It is apparent from Table XXIX that journalism students have the highest degree of interest maturity followed closely by education students. The lowest standard scores are achieved by medical and law students. This would seem to indicate that journalism and education students have less likelihood of a change in interests than have students in the other schools.

Table XXV evaluates the differences in masculinity-femininity. This table indicates that journalism attracts students with a tendency toward feminine interests. This is shown by the fact that journalism has the lowest standard score on this scale. Education has the next lowest score. The group with the most masculine tendencies, as shown by its possessing the highest score on this scale is Mechanical Engineering. These findings are in almost complete accord with those of Strong.[15] It seems to indicate that journalism and education attract people with tendencies toward effeminate interests to a greater extent than do the other schools.

An examination of the F ratios in Tables XXVI through XXXVI reveals that on each of the occupational interest scales of the Strong Vocational Interest Blank the differences between schools are extremely significant. All but one have an F ratio which is significant at the one-tenth of one per cent level. This finding is reasonable since it is to be expected that a majority of the students in a professional school would have interests similar to those of members of that profession. Table XL indicates the students scoring highest on Group I (artists, physicians, etc.) are the medical students. The students scoring lowest in this group are the mechanical engineers. The students scoring highest on Group II (physicist, engineer, etc.) are not the mechanical engineers as might be expected but the medical students again. The mechanical engineering students, however, score nearly as high as do the medical students. Both of these student groups represent scientific professions pretty well encompassed by Groups I and II on the Strong Vocational Interest Blank.

The ranking of the education students in the interest groups in which they are represented is interesting. The mathematics, science, physics teachers are in Group IV and in that group the education students rank second to mechanical engineers. Social sci-

[14] E. K. Strong, Jr., *op. cit.*, pp. 324–325.
[15] E. K. Strong, Jr., *op. cit.*

TABLE XXXIX

MEANS OF STANDARD SCORES ON THE NON-OCCUPATIONAL INTEREST SCALES OF THE STRONG VOCATIONAL INTEREST BLANK

Non-Occupational Interest Scale	SCHOOLS				
	Medical	Law	Education	Mechanical Engineering	Journalism
Occupational Level	57.24	59.84	52.2	51.96	56.6
Masculinity—Femininity	44.56	44.84	40.9	54.6	39.4
Interest Maturity	52.1	52.72	56	54	57.04

ence, high school teachers and city school superintendents are in Group V and in that group education students rank first.

A possible explanation of the finding that education students are not first in group four is to be found in the low correlation between this group and interest-maturity scores. A high correlation would indicate that those scoring high in this group also have a high degree of interest maturity. On the other hand, a correlation as low as that shown in Table XII between this group and interest-maturity indicates that a fairly large number of low interest maturity scores may be expected as well as some high ones. If these low interest maturity scores are present, they would indicate that these interests are short term in nature and subject to change. It may be that education being the only one of the student groups represented in Group IV would be first if a recheck were made at a later date.

The top ranking of education students in Group V is to be expected because they are represented by two of the seven occupations in the group.

Significant F ratios appear on all the other occupational groups. This indicates that the Strong Vocational Interest Blank does discriminate between occupations. The accuracy of this discrimination is brought out in Group X. This group contains two of our five student groups. These two groups, journalism and law, are the two scoring highest on that scale.

The analysis of variance technique permits the statement that significant differences do exist between students enrolled in five different professional schools including education. A cautious inference can be made that perhaps these differences are basically founded in differences in the personalities, non-occupational interest factors, and vocational interests of the students and that these have a tendency to predispose them toward enrollment in certain professional schools.

SECTION V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The purpose of this section is to bring together in a concise way the results of this investigation. The implications of these results for guidance services as well as for the institutional education of teachers will also be discussed. It has been impossible to examine

TABLE XL

MEANS OF AVERAGE STANDARD SCORES ON THE OCCUPATIONAL SCALES OF THE STRONG VOCATIONAL INTEREST BLANK TABULATED BY SCHOOLS

Occupational Scale		SCHOOLS				
		Education	Mechanical Engineering	Journalism	Medical	Law
Group	I	24.9	20.4	20.6	33.6	13.7
	II	18.9	24	11.8	27.5	8.4
	III	31	43.7	27.7	29.5	28
	IV	28.8	35.9	22.8	27.3	19.8
	V	36.8	27.4	34.3	28.2	34.5
	VI	35.8	28.0	34.3	34	21.7
	VII	26.8	24.4	29.6	27.7	35.5
	VIII	28.5	30.1	29.6	22.9	33.2
	IX	36.8	30.1	42.7	32.8	45.6
	X	34.2	26.8	41.2	37	38.2
	XI	26.1	32.6	28.5	31	33.6

all the implications of the present study, which may be investigated in the future in terms of suggestions indicated by the data already obtained. A list of recommendations for continued research in this area concludes the discussion.

This study concerns itself with the comparison of students enrolled in Education with those enrolled in Law, Medicine, Journalism, and Mechanical Engineering. The qualities compared were certain personal and environmental factors, personality traits, and interests.

The data gathering instruments were a short questionnaire, the Minnesota Multiphasic Personality Inventory, and the Strong Vocational Interest Blank for Men. The Minnesota Multiphasic Personality Inventory provided scores on ten personality scales. The Strong Vocational Interest Blank for Men provided scores on thirty-nine occupational scales which were divided among eleven groups. This blank also provided scores on three non-occupational interest scales.

The subjects numbered twenty-five from each of the schools studied. This provided a total number of 125 subjects. A random numbers procedure was used in selecting the subjects.

Summary of Results Concerning Comparisons of Personal and Environmental Factors

1. There is a range of about ten years in the ages of the various student groups. The average age is twenty-five and one-tenth years. The journalism students have the oldest average age and the medical students have the youngest average age.

2. Regarding the physical qualities of height and weight there are no significant differences between the various schools. Law students were the heaviest and mechanical engineering students the lightest.

3. There is evidence that education and medical students tend to come from smaller communities than do mechanical engineering, law, and journalism students.

4. There is a tendency for professional school students to come from small families. The families from which education students come tend to be slightly larger than the families of journalism, medical, law, and mechanical engineering students.

5. Apparently the fathers of students in professional schools engage in business and trades more often than they engage in labor, farming, or the professions.

6. The majority of the students in every school rate their health as being good.

7. The education group is the only group in which a teacher's influence affected the choice of vocation to any extent.

8. A great majority of the students ascribed no importance to counseling received in high school or college in influencing their choice of vocation.

9. Most students believe general interest in the profession to be the cause of their preparation for it.

Summary of Results Concerning Correlations Between Personality Traits and Interest Factors

1. Five of the ten personality traits on the M. M. P. I. are significantly correlated with one or more of the eleven Strong Vocational Interest groups.

   a. Psychasthenia correlated to a small but significant degree with the occupations of musician and president, manufacturing concern.
   b. Eight of the eleven Strong occupational groups correlated significantly with the femininity scale on the M. M. P. I. All of the five professional student groups under study were in occupational groups on the Strong Vocational Interest Blank which correlated positively with femininity. Group V correlated negatively with masculinity-femininity. This group includes social science teachers and city school superintendents among others.
   c. Depression correlated significantly with three of the Strong Groups. These were Group II (Physicist, engineer, etc.), Group IV (farmer, aviator, mathematics, science, physics, teacher, etc.), and Group IX (sales manager, real estate salesman, etc.). This last named group indicated a significant negative correlation.
   d. Schizophrenia correlated positively with Group I (artist, physician, dentist, etc.), Group III (production manager), and Group VIII (accountant, office man, banker, etc.). The last named group had a significant negative correlation.

e. Social Introversion had a positive correlation with Group II (Mathematician, physicist, etc.), Group IV (farmer, aviator, mathematics-physics-science teacher, etc.). Significant negative correlations were indicated for Group V (YMCA physical director, personnel manager, public administrator, social science teacher, city school superintendent, etc.), and Group IX (sales manager, life insurance salesman, etc.).

2. Three of the personality traits on the M. M. P. I. correlated significantly with certain of the three non-vocational interest qualities on the Strong Vocational Interest Blank.

a. Paranoia correlates negatively with occupational level.
b. Psychasthenia correlates negatively with interest maturity.
c. Femininity on the M. M. P. I. correlates negatively with femininity on the Strong Vocational Interest Blank. This correlation is significant at the one per cent level. Regarding this it is well to remember that a high score on the M. M. P. I. scale indicates femininity and on the Strong Blank a low score indicates femininity.

3. The non-occupational interest scales on the Strong Vocational Interest Inventory correlate significantly with the majority of the occupational interest groups.

a. Occupational level is positively correlated with Group III (production manager), Group V (YMCA secretary, social science teacher, city school superintendent, etc.), Group VII (C. P. A.), Group IX (sales manager, real estate salesman, etc.), Group X (advertising man, lawyer, etc.), and Group XI (president, manufacturing concern).
b. Interest maturity correlates negatively with Group I (artist, physician, dentist, etc.), Group II (mathematician, engineer, etc.), and Group X (advertising man, lawyer, etc.).
c. Masculinity-Femininity correlates positively with Group II (physicist, engineer, etc.), Group III (production manager), Group IV (aviator, printer, mathematics-physics, science teacher). It should be noted that a high score on the masculinity-femininity scale of the Strong Blank indicates masculine tendencies.
d. Masculinity-femininity correlated negatively with Group V (social science teacher, city school superintendent, minister, etc.), Group VI (musician), Group VII (accountant, office man, etc.), Group IX (sales manager, real estate salesman, etc.), and Group X (lawyer, author-journalist, etc.). A low score on this scale indicates feminine tendencies.

Summary of Results Concerning Analysis of Variance Data

1. Significant differences were found to exist among the five groups of professional students regarding three of the ten personality traits under study.

a. Mechanical engineers were found to score highest on the hysteria scale.
b. Medical students scored highest on the schizophrenia scale. Mechanical engineers scored lowest.
c. Mechanical Engineering student scored highest on social introversion followed closely by education students.

2. Differences which were significant to the level of one-tenth of one per cent and beyond were found to exist among the professional school students regarding the non-occupational scales of occupational level, interest maturity, and femininity.

a. Law students seem to have the highest occupational level. Medicine, journalism, education, and mechanical engineering follow in the order named.
b. Journalism students indicate the highest degree of interest maturity, closely followed by education students.

3. Extremely significant differences were found to exist between the occupational interests of the students in the five professional schools. These differences are in most cases significant at the one-tenth of one per cent level.

a. Social science teachers and city school superintendents are in Group V on the Strong Vocational Interest Blank. In that group education students achieve higher interest scores than any of the other four student groups.

b. Mathematics, -physics, -science teachers are in Group IV on the Strong Blank. In this group they rank second among the five student groups.
c. In Group I, which includes the profession of physician, medical students rank highest.
d. In Group II which includes the profession of engineer, medical students were scored highest, but they were closely followed by the mechanical engineering students.
e. In Group IX which includes the professions of law and journalism, law and journalism students scored highest.
f. It seems that education students have no clear cut interest in teaching as such. The subject matter content seems to be the main determinant of the interests of education students.

Conclusions

It is significant that the greatest differences between the five groups of professional students were in their vocational and non-vocational interest tendencies rather than in personality traits. Research in interest measurement provides evidence that interests are fairly permanent throughout the age range of fifteen through fifty-five years.[1] There is also evidence that interests are little influenced by training and experience in an occupation. The large differences in interests between groups revealed in this study, in addition to the above evidence regarding the permanence of interests and effect of training on interests, indicate that interest measurement has value in differential prediction and advisement. This predictive effectiveness exists in an indirect sense only insofar as it indicates types currently entering the various professions.

The slight correlations between personality traits and interests support previous findings that in general there is little in common between scores on interest inventories and those on personality inventories. The correlations which were significant were so in a statistical sense only. This limits their application to group comparisons.

The fact that the differences in personality traits between education students and students in law, medicine, mechanical engineering, and journalism are so small as to be statistically insignificant refutes any implication that education students are inferior in personality traits to other groups.

In view of the large differences among the professional schools regarding interests it seems that interest measurement should be a part of the selection procedure by which candidates are selected for the profession of teaching. A larger body of data should be accumulated about the interests of teachers and other workers in education. This same statement can be made concerning selection for four other professions.

Recommendations for Future Research

Many studies have been made involving the study of personality traits, interests and other qualities. As new instruments are developed it is necessary that they be used and evaluated. This process in itself provides many opportunities for fruitful research. The following are suggested as worthy projects for which the present study might serve as a prototype.

1. A comparison of practicing lawyers, doctors, teachers, engineers, and journalists. These could be divided into successful and unsuccessful categories on the basis of adequate criteria. Their personality traits, interests, health, physical characteristics, and mental qualities could be compared.

2. Comparisons of the personalities, interests, physical characteristics, and mental qualities of students in education who are preparing for classroom teaching in various subject areas, or who are preparing for administration, supervision, guidance, or any of the other school services. A body of data could be collected which would be useful in differential prediction and advisement of students interested in education.

[1] E. K. Strong, Jr., *op. cit.*, pp. 50–52.

A STUDY OF THE PROFESSIONAL CURRICULUM REQUIREMENTS FOR THE PREPARATION OF HIGH SCHOOL TEACHERS IN THE UNITED STATES

KENNETH RALPH DOANE*
Montana State College, Bozeman, Montana

SECTION I

INTRODUCTION

This study makes an analysis of practice in teacher training institutions.* Further, it notes current trends and makes information available that should be helpful to those interested in planning and improving the pre-service professional education of high school teachers.

IMPORTANCE OF THE PROBLEM

In many respects, teachers of high school age children hold the most important posts in our existing educational systems. The high school represents the last step in the foundational education of the child,—in the common man's university. The teachers in this school must be well qualified, professionally, in order to accept so serious a challenge.

A sound pre-service training of teachers is the very foundation of providing good teachers for our schools. "To improve teacher education is to improve teaching; to improve teaching is to improve the schools; to improve the schools is to strengthen the next generation; to strengthen the next generation is a social duty of the first magnitude." (176:24) It is true that today's emphasis upon in-service training of teachers is achieving most gratifying results. If the undergraduate program had been stronger however, it seems reasonable that the problems of in-service training would have been minimized or would be concerned with more mature and important matters.

An analysis of practices in professional education represents an important consensus of opinion. The points of view are often far more meaningful when seen in action than when heard or seen as words. Since any consensus of practice is after all a consensus of workable theory, surveys such as here undertaken should supply important data for developing criteria to be employed in evaluating practices in particular schools. Such summarizations are valuable as a source of suggestions leading to the improvement of a program, in making plans for meeting the needs of prospective teachers, and for designing experimental approaches in teacher education. Much of what we learn comes to us as the result of the experiences of others.

The modern worker in professional education seeks to be well informed. He is primarily concerned with the body of experiences that will produce good teachers. His need for information as to region-wide and nation-wide practices is obvious as he sets out to solve problems in his working site.

While much has been done in this area, the existing surveys are now well out of date. Accordingly, it is the purpose of this study to present a broad up-to-date picture of the pre-service professional education curricula requirements.

DELIMITATIONS OF THE STUDY

Because of the complexity of the problem and the factors involved, some statement should be made of the limits within which the study has been carried on. The list of major boundaries that have been established are as follows:

1. Three groups of schools have been studied.

Group I—All colleges and universities supported wholly or in part by state and federal funds except those that are classified as teachers colleges are included. The authority for classification is the *Educational Directory—1944–45—Part III* published by the U. S. Office of Education. Examples of members of this Group are: University of Delaware, Gallaudet College, Michigan State College, Lincoln University, University of Wisconsin, Humboldt State College.

* The author gratefully acknowledges the assistance of A. S. Barr, faculty advisor, in the planning and conduct of the study here reported.

Group II—All state supported teachers colleges as defined by the above publication are assigned to this category. Examples are: State Teachers College at Florence, Alabama, Iowa State Teachers College, Louisiana State Normal College, Tennessee Agricultural and Industrial State College, Eastern Washington College of Education.

Group III—All of the colleges and universities that are members of the North Central Association and supported by municipal, church, or private funds are included. These were classified as such by the above publication. Examples are: Grinnell College, Duchesne College, Wayne University, Fenn College, Lawrence College.

Further reference to these classifications will be made in terms of Group I, Group II, and Group III.

2. The study is limited to the analysis of the pre-service professional education courses that are required.

3. The study is limited to the preparation of high school teachers of general academic subjects such as: English, mathematics, languages, science, social sciences.

4. The data is limited to the United States and its territories.

5. The study is limited to the undergraduate courses ordinarily found in the professional education sequence. (i.e. A course in English is not included unless it is a course in the teaching of English. General psychology, or its equivalent, is thought to be a part of the professional sequence by many colleges and is here included. A course dealing with the major generalizations of teaching is included.) Some writers include aspects of the general cultural training as being of professional character and significance. This point of view is not denied, but such courses are not included in this study. The desire to avoid confusion led to the exclusion of courses other than generally recognized professional education courses.

Objectives of the Study

The study here reported is guided by the following purposes.

1. To find the courses in professional education that are required in curricula for the preparation of high school teachers in the United States.

2. To derive a composite description of the more prominent courses in terms of broad aims and topics studied.

3. To identify the characteristic likenesses and differences to be found in the regulations for certification for first year teachers in all the states.

4. To present the opinions of a large group of people who are working in the field of professional education with respect to several of the fundamental issues confronting the field at the present time.

5. To present the opinions of a group of well recognized writers in the field of education with respect to several of the fundamental issues confronting teacher education.

6. To present other pertinent information about the cooperating institutions such as:

a. A comparison of the frequency of schools that prepare high school teachers of general academic subjects with:
   (1) the number that are not preparing teachers of children
   (2) the number that are preparing high school teachers of only specialized areas (i.e. music, physical education, home economics, agriculture, etc.)
   (3) the number that are preparing only elementary teachers
   (4) the number that are preparing elementary teachers and high school teachers in specialized areas but not general academic high school teachers
b. The frequency of various degrees granted to prospective teachers upon the completion of the required curriculum
c. The differences between the Bachelor of Arts and Bachelor of Science degrees as to be found by pronouncements of granting institutions
d. The frequency of colleges and universities that serve only one sex
e. The frequency of colleges and universities that serve only minority races or groups
f. The comparative popularities of the semester and quarter as term lengths

Assumptions

Certain assumptions were made at the outset of this investigation. They must be taken into account to gain full appreciation of the conclusions drawn in the study.

1. The catalog publications of the institutions included in the study were assumed to be correct with respect to descriptions, number of credits, professional education requirements, term length, degrees granted, etc. The greater part of the data employed in the study was taken from them.

2. In instances where questionnaires were used to secure supplementary data, it is assumed that these reports were accurate.

3. The work of Woellner and Wood in their *Requirements for Certification of Teachers and Administrators* published by the University of Chicago Press in 1945 was posited as being authentic. Its wide acceptance and high reputation in connection with certification laws of the states and the District of Columbia would seem to permit its use.

4. A summarization of practice divorced from situations giving rise to it may contain valuable information for those interested in the planning and improvement of professional education of teachers.

SECTION II

PROCEDURE

Introductory Comment

It will be the purpose of this section to describe the types of data sought, the instruments used, and the techniques employed in the treatment of the data.

The entire study may be divided into three phases. The first phase deals with the professional education requirements for the preparation of high school teachers as taken from catalog statements. The second phase considers the states' laws for the certification of high school teachers. The third phase treats the opinions of educational workers.

First Phase

An effort has been made to solicit responses from a large number of institutions. The following information was secured from each institution.

1. The name of the school and its location by city and state.

2. Whether or not they trained teachers for any level, at all.

3. Whether or not they trained high school teachers for general academic areas such as English, mathematics, social science, science or languages.

4. The kinds of teachers they did prepare if they did not prepare general academic teachers for the high school.

5. The titles of required courses in professional education, psychology, methods, and student teaching if they did train high school teachers.

6. The descriptions of these courses.

7. The credit hours granted these courses.

8. The term length for the school.

9. The degrees granted to prospective high school teachers of general academic subjects upon the completion of the undergraduate program.

10. The differences between the curricula for the Bachelor of Arts and the Bachelor of Science degrees.

11. The graduate degrees offered to students upon the completion of graduate programs aimed to increase the competency of the teacher.

12. The degrees granted to prospective teachers in schools other than those who train teachers for the general academic work in high schools.

13. Whether or not the school personnel was composed only of minority groups such as colored, Indians, or deaf.

14. Whether or not the school personnel was composed of a single sex.

15. The name of the person at the head of the department of education or school of education or college of education or the name of a person that was a member of the above organizations.

Instruments Used

The catalogs of the various institutions were utilized for the bulk of the information. This source represents the official statements for each institution and are probably the most accurate source of data relative to the schools for any given date.

The following devices were utilized to secure catalogs.

1. *The Educational Directory—1944-45—Part III—Colleges and Universities* published for the U. S. Office of Education by the U. S. Government Printing Office was used to secure the names of the institutions and their locations by city and state.

2. Government postal cards were sent out to the registrars of the institutions in solici-

tation of a copy of the school's latest catalog. Samples of the first postal card and all follow up cards are to be found in the Communications section of the appendix.*

3. Some schools did not comply with the request. In several of these cases, the catalogs on file in the office of the Secretary of the Faculty of the University of Wisconsin were used.

A data sheet (Communication III) was employed to secure the desired information in the few instances where catalogs were not available. Sample copies of letters accompanying the data sheets appear in the Communications section.

Catalog Analysis

The exposition to follow describes the work between April 6, 1945 and August 1, 1946.

Upon the receipt of the catalogs from the first 84 state supported teachers colleges, namely members of Group II that complied with the request for catalogs, each catalog was studied separately for the information desired. The following information and extracts were recorded.

1. Name of the college.
2. City and state in which the school was located.
3. Length of the term.
4. Degrees granted to prospective teachers of general academic subjects in high schools.
5. Degrees granted to teachers in cases where the above teachers were not trained.
6. Differences between the Bachelor of Arts and the Bachelor of Science degrees where they were both offered.
7. Type of teachers trained in the event that general academic teachers for high schools were not prepared.
8. Titles of the required courses in professional education in the curricula under consideration.
9. Extracts of descriptions included in the catalogs for the course listed as being required.
10. Number of credit hours given to the student for his successful work in the course.
11. Key word for the character of the course descriptions.

It should be emphasized here that course titles and descriptions were reproduced exactly and completely as they appeared in the catalog. Only those courses that were required were reported. Options of two or more courses or selections from a group of electives were excluded.

Next, a frequency tabulation of exact course titles was made after the technique of Barr and Emans in the latter's study of items of teacher rating scales. (32:17) Catalogs subsequently received were treated similarly.

In some cases, because of incomplete catalog statements, it was necessary to submit a data sheet to the individual college or university for verification and extension in order to get the needed facts. In these cases, the material taken from the data sheet was used to supplement that of the catalog in the deficient items. The catalog remained as the primary source of information.

In a few instances, where the college or university failed to comply with the request for the catalog due to shortages or for their own reasons, they were asked to fill out data sheets which were used as the basis for the facts here assembled.

Where there was a question as to one or two points of statement as to exact meaning, a letter was written directly to the registrar or to the education department to clarify the point. This supplementary information was added to the data sheets.

The headings for recording data were: College, term, degrees, required curricula, and course description. The data was tabulated as follows:

Tabulations under "college" included the state, the city, and the title of the college. In addition, the notations "men" for the schools exclusively for men, "wo" for the schools exclusively for women, "col" for the schools exclusively for colored students, "Ind" for the schools which worked with Indians only, and "deaf" for the school which dealt with deaf students only, were noted. Numbers 1, 2, 3, 4, 5, 6, 7, 8 or 9 were written for the colleges that had no curricula for high school teachers of general academic subjects. Number 1 indicated that the college trained elementary teachers, 2 indicated music teachers, 3 indicated industrial arts, 4 indicated home economics, 5 indicated art, 6 indicated commercial, 7 indicated agriculture, 8 indicated physical education, and 9 indicated that the college trained teachers of guidance. "None" was used to indicate the colleges and universities that trained no teachers of any type.

* See thesis on file, Library, University of Wisconsin.

The "term" heading was broken into columns headed S to stand for semester and Q to stand for quarter. Each of the colleges reported was entered in one of the columns with a small check (√).

"Degrees" had six parts, namely, BS, BA, BE, other, Graduate, and BS and BA (difference). If a school granted the Bachelor of Science degree to a student upon the completion of his undergraduate work, a check (√) was placed in the respective position. BS indicated Bachelor of Science; BA indicated Bachelor of Arts; and BE indicated Bachelor of Education. Similar tabulations were made for the last two degrees mentioned. For a school which offered any other undergraduate degree in the field of teacher education, the abbreviation for the degree was entered in the corresponding place in the column headed "other". Those colleges and universities that offered graduate work for teachers in either academic areas or in education were indicated through an entry in the "graduate" column. Some schools were granting both the Bachelor of Science and the Bachelor of Arts degrees to students with differences in the curricula for the degrees. In these cases, numbers 1, 2, 3, 4, 5, 6, 7 or 8 were entered in the column headed "BS and BA (difference)". Number 1 represented the schools that had a language requirement for the Bachelor of Arts degree; 2 indicated that the Bachelor of Arts is given to students who have undergraduate majors in English, history, languages or arts; 3 showed that science was required for the Bachelor of Science degree; 4 indicated that the Bachelor of Arts degree was given to students with majors in music, languages, history, art, or social sciences; 5 was used for the colleges where the Bachelor of Science degree is granted to those who transfer from three year courses in other schools, particularly normal schools; 6 showed the Bachelor of Arts for the majors in art, history, languages, music, or mathematics; 7 indicated that the Bachelor of Science was given to students who major in education; and 8 represented those schools that grant the Bachelor of Science to majors in science or mathematics.

The heading "Required Curricula" was divided into subdivisions headed general psychology, educational psychology, psychology of adolescence, mental hygiene, student teaching, educational measurements, introduction to education, special methods courses, guidance, secondary school curriculum, principles of secondary education, principles of teaching, philosophy of education, history of education, administration for high school teachers, observation, principles of education, and miscellaneous.

If a college or university required a course, the number of credits given with the course was placed in the proper position and column. In some cases there was overlapping of course titles or description of content. These were placed in the "miscellaneous" column for later treatment.

If a course had a frequency of less than 10 or evidence was lacking to have it placed under one of the well defined headings, it was entered in the "miscellaneous" column. Here, the notations were made with the number of credits and the title of the course for ease in later reference and treatment.

The final division of the sheet had the heading of "Course Descriptions". This part was broken up into three columns headed "complete", "some" and "none". If a catalog course description had an outline of activities carried on in the course or a group of objectives, a check (√) was placed in the proper position under "complete". A check (√) was written in the corresponding position under "some" if the description had only a brief remark or generalization as to the purposes or work of the course. For those cases where no description was given, a check (√) was placed in the "none" column. In the few cases where the data was received primarily through the use of the data sheet, a Q was placed in the "none" column.

When all of the tabulations had been made for the three Groups, total frequencies were found by counting the number of entries in particular columns. Through the use of large sheets for recording purposes, this summing process was greatly simplified. Totals were expressed for each of the characteristics involved in this phase of the study for each of the three Groups. The comparison of respective totals of entries with the maximum possible entries yielded percentages for use in expressing relationships between Groups. Each item of consideration had at least eight descriptive numbers. For each of the three Groups, the item carried a total frequency of occurrence and a percentage of the maximum occurrence. The total frequency found for the

item among all three Groups and its percentage of the maximum of the whole sample accounted for the seventh and eighth numbers for each item.

Tables of each item were drawn together. These included the totals of the items for each Group, percentages of the items for each Group, and sums and percentages of the items of the three groups combined. Ranking was employed throughout in the construction of the tables. The items that occurred most frequently in a given classification were listed first; the others followed in the order of frequency. The basis for the ranking was the sum of the totals for each of the items. These tables may be found in Chapter IV and the appendix of this report.

To further analyze the differences that occurred between Groups of schools, chi-square tests of independence were applied to each of the first thirteen courses in order of frequency. Contingency tables were set up to test the deviation of fact from theory for each course. These tables contained frequencies of those schools that required the particular course and frequencies of schools that did not require the course. The characteristics were checked in each of the three Groups. (79:110) Chi-squares for each of the courses were determined. (79:111) The corresponding probabilities with two degrees of freedom were determined from prepared tables. (72: 498) (58:36) The five per cent level of significance was used for testing the null hypothesis of no relationship between the frequencies that required the course and the frequencies that did not require it.

Corresponding chi-square tests were applied to the prominence of term lengths among the Groups of institutions.

Because of the fact that Groups I and II are nation wide in scope and representation, the first 13 courses of frequency ranking were submitted to the chi-square test of independence.

The schools in Groups I and II that are located in the area served by the North Central Association were extracted from the totals with respect to the first 13 required courses. It was felt that a more fair test of independence would result if these extractions and the whole of Group III be set up for contingency tables. The chi-square test of independence was used.

Five geographical areas of the country were arbitrarily determined for the purposes of testing the null hypothesis of the relationship within the five areas for Groups I and II. The five geographical areas followed the lines established by the boundaries of the five accrediting associations of the country that deal with more than one state. In this treatment, the first six courses were submitted to the chi-square test in Groups I and II, separately.

Analysis of variance technique was applied to the first seven courses in frequency ranking and the five geographical areas as defined above. The purpose was to determine whether or not the variance between the schools in the sets of states or between the courses were significant. This was carried out for Groups I and II, separately. (79:137) The total frequencies for each of the seven courses among the five areas were transformed into percentages of the total schools in the areas. These percentages were then stated in terms of radians. This latter transformation was made according to: radians $=$ arcsin $\sqrt{\text{Percentage}}$. (25:116) (14:335) The "F" of the variance was found. (58:61) Using available tables for the significance of Snedecor's "F" was checked to note the level of significance. (58:62) The five per cent level was assumed in these cases.

The results of the tests of significance and the analysis of variance were drawn up into tables under appropriate classifications. They may be found in section III and the appendix of this report.

Second Phase

This aspect deals with the problem of certification requirements made by each of the states. It is limited to the prescribed professional education work for qualifying for the initial certificate. This implies that information was needed as to the specific requirements taken from the state certification law of those states. The best source of material of this type for convenience and economy of time and effort is *Requirements for Certification of Teachers and Administrators* by Woellner, Robert C. and Wood, and M. Aurilla, published annually by the University of Chicago Press, Chicago, Illinois. (93)

Extracts of the above authors' treatment by states of the certification requirements in professional education were taken for study.

Data was recorded under the following headings: state, minimum education, type of school, hours of professional education, required courses, electives, special requirements, and miscellaneous.

The name of the state under consideration was written in the first column.

The heading "minimum education" was subdivided into degree, graduation, completion, and advanced work beyond baccalaureate degree. If a state's certification law was specific on the matter of having a candidate for an initial certificate hold the bachelor's degree a check (√) was placed in the "degree" column. Some states used the words "graduation" or "completion" instead of the degree remark. In these instances, checks (√) were placed in the respective columns. In the cases where advanced work beyond the baccalaureate degree was required for the initial certificate to teach general academic subjects in high schools, the specific notation as to the requirement was written in that column.

Through inspection in developing the abstracts of data, it was observed that the terminology used to define the types of schools in which the candidate made his preparation was exceedingly varied. In order to adequately describe the type of school, it was necessary to make tabulations under the many key words or phrases found. These headings were subdivisions of the "type of school" column: standard, approved, accredited, recognized, 4 year, institution, college, university, normal school, teachers college, state department, post-secondary, state teacher training, equal or equivalent, secondary teacher preparation curriculum, and regional association. These sub-headings are result of a minor frequency consideration of the words most frequently used to describe the type of school in which a candidate might do this work. If the word "standard" was used in this description, a check was placed in the proper column. Correspondingly, if any of the other key words were found, they were likewise entered in the correct column. In a very few cases, it was necessary to write in the direct words from the extract in the column most like the words used. For example, "state board of education" was written under the heading of "state department".

The number of hours in professional education that were required by the law were written under that column.

"Required courses" was subdivided into: student teaching, teaching of the different school subjects or methods of teaching of the different school subjects, educational psychology, principles of teaching or methods of teaching, substitution for student teaching, educational measurements, and principles of secondary education. In most cases, the states made a direct statement as to the number of credit hours of student teaching that was required. This number was written under the heading "student teaching". If there were additional provisions to be satisfied in connection with this work, the provision was written in the proper space under the same heading. The same general procedure was used for the other items of this larger group heading. A word of explanation should be made regarding the use of the "substitution for student teaching" column. Many states allow a candidate for an initial certificate to teach in high schools of that state to make a substitution of successful teaching experience of varying lengths of time for the student teaching requirement. In using the column, the number of months or years of successful teaching experience accepted was written in the column.

"Electives" included entries for the states that made a definite mention as the number of hours of electives allowed the candidate. The number of hours was written in the designated column.

Such items as special examinations or special professional subject matter requirements such as the study of the school law of the particular state were recorded in the column, "special requirements". Entries were made in full description of the requirement.

Information that could not be classified in any of the foregoing categories was placed in the "miscellaneous" column for later treatment. Such statements as a list of electives allowed, the title of the initial certificate, the titles of advanced certificates, other courses not previously mentioned, and other pertinent facts were written here.

The tabulations completed, sums were made where possible, means computed, and simple tables constructed to form generalizations as to the particular topic under consideration. Also, the items of similarity within the "miscellaneous" column were noted and reported.

Summary Report of First and Second Phases

A report through tables of the data gathered by May 7, 1946 was prepared and submitted to all the cooperating colleges and universities on June 5, 1946. This report contained the significant features that had been isolated at that time with the data under consideration. A copy of this report appears as Communication VII of the appendix.

Third Phase

The third phase deals with the opinions of two groups of people, those who were actively working in the area of professional education of high school teachers particularly at the undergraduate level and those who were considered to be of outstanding reputation in the field of education. For the first group the individuals whose opinions were solicited were obtained from the copies of the catalogs. In general, the dean of the school of education, and the head of the department of education, or some professor in the department were selected in that order of preference. The names of the people selected were written in the "miscellaneous" column of the sheets used for the first phase of the study.

A questionnaire of six of the basic questions now confronting the professional education field was constructed. These questions were directly related to the curriculum in professional education. A seventh question gave the people an opportunity to comment upon other items of concern that had not been covered in the preceding six. A copy of this questionnaire was included in the report to the cooperating colleges and universities. It appears as Communication VIII of the appendix.* A letter was sent explaining the nature of the report at the same time. This appears as Communication IX of the appendix. The follow up card, found as Communication X of the appendix, was sent out to those people who had not returned the questionnaire by July 5, 1946.

The question one space on the tabulating sheet was broken into two narrow columns and one broad one. The narrow columns were used for reporting the direct answers to the two parts of the question. These columns were headed "a" and "b" to correspond to the two parts. If the person who responded to the questionnaire answered one of them positively, a plus sign (+) was entered in the proper column. If the reaction was negative, a zero (o) was used. The questionnaire was constructed with the idea that people could answer with "yes" or "no", directly, or they were free to respond at greater length. For the many who reacted with more than one word, these qualifications were written in the remainder of the space devoted to question one. The reactions were recorded almost wholly in order to preserve the full idea of the author of the comment. The same general procedure of the handling of qualifications was used with the remaining questions.

The space for question two was divided into a narrow column and a wide one. The narrow column was used to report the direct answer to the question. If the person said "yes", a plus (+) was entered in the column. If he said "no", a zero (o) was recorded. In the cases where five year programs were in practice, "5" was written in the proper space. The remainder of the space was used to report the qualifications.

Question three dealt with the order of importance of courses in the professional curricula. The space on the sheet was divided into seven narrow parts and one wide column. From contact with the questionnaire reactions, it was observed that educational psychology, student teaching, principles of teaching, teaching of the different school subjects, philosophy of education, educational measurements, and introduction to education had been very frequently mentioned. These course titles were used to head the narrow columns. The data from the reactions supplied the rankings of courses. If one of these seven courses had been ranked second, a "2" was written in the appropriate space. The number of the position of the course with respect to the others determined the number that was recorded on the sheet. In many cases, authors listed courses that were not among these seven. These instances were written in the wide part of the space with the proper ranking number preceding the title. In the event that a response had listed more than five courses for consideration, only the first five were recorded.

The lay-outs for questions four and five were identical to question one.

The area of the sheets set aside for question six was to be used for handling reactions to student teaching. This was broken up into

* See thesis on file, Library, University of Wisconsin.

three narrow columns and one wide one. From contact with the reactions, "improvement of supervision", "off-campus experiences", and "internship type of work" were noted to be frequently mentioned. The narrow columns had these headings. If individual responses contained any of these, a check (√) was put in the correct position. For the many cases where other comments than these three were made, the reply was wholly reported, or it was recorded to the extent that the original intent of the author was maintained.

In the case of question seven, reactions were exceedingly broad. A classification system was not evident. The whole reaction was written in the space reserved for question seven. In the case of very lengthy responses, the key clause was reported.

The handling of the data after it had been tabulated was largely a matter of collecting the similar responses. In the cases of reactions to questions one, two, four and five, the positive and negative replies were summed for the various questions or parts of the questions. The totals were also expressed as percentages of the sum of reactions. The qualifications that were similar in each question were grouped and a sum shown for this group of like replies. This technique was also used in dealing with questions six and seven. The frequencies of similar reactions were usually quite low, and there were many instances of a single response of an idea. These frequencies were drawn together in appropriate manner into tables which are found in Chapter IV and the appendix. Each of these tables has three parts. One part exists for each Group of Institutions.

Question three's replies had to be handled in a different fashion because of the nature of the question. To find the composite judgment of all the responses within a Group of colleges and universities, it was felt necessary to employ an index technique. For a given Group, all of the ranks for a particular course were inverted. For example, a course ranked first by a single author was changed to "5". If an author ranked a course as second, it was changed to "4". In terms of equivalents, first rank was "5"; second rank was "4"; third rank was "3"; fourth rank was "2"; and fifth rank was "1". If an author did not list the course at all, its equivalent was "0". To find the index of a particular course within a Group, the sum of equivalents was divided by the total number of reactions of the Group. The courses were ranked in order of indices and placed in table form.

It was felt desirable to obtain reactions on the questionnaire from people of outstanding reputation in education. They comprised the second group of responses. Those of high repute were selected from a frequency tabulation of the names of authors of books in the field of education. The section of the *National Education Association Journal* entitled, "Sixty Best Education Books" was used as source of names. (51) Annual listings from 1923 through 1945 served as bases of selection. Authors who appeared four or more times during the period were chosen for the final group. There were 51 (Table XXVIII) names in this set. The Research Division of the National Education Association supplied the addresses of these people. An introductory letter (Communication XII), a copy of summary tables (Communication XI), and the questionnaire was sent to the people on April 28, 1947.

The reactions were handled similarly to the reactions made by the teacher education workers.

Summary

Throughout this section of the report, we have been concerned with the procedure employed. The types of information sought were requirements of the colleges and universities in this field, the requirements of the state certification laws, and the opinions of many people engaged in this work. The data was gathered largely through means of catalogs and questionnaires. The analysis of the data was made through breakdowns of significant items into broad classifications which were subdivided further to promote the objective evaluation of the statements made. Generalizations based on the data were developed through summing the separate similar classifications. The total of each item with respect to the total population considered was also expressed.

SECTION III

RESULTS OF THE STUDY

The purpose of this section will be to present the findings from the analysis of the data collected from various sources described in Section II.

TABLE I

TOTALS OF INSTITUTIONS USED

Group I.	All the colleges and universities other than teachers colleges, in the United States that are supported to some extent by state or Federal funds	146
Group II.	All the state supported teachers colleges in the United States	170
Group III.	All the colleges and universities of the North Central Association that are supported by municipal, church, or private funds	174
Total of Groups I, II, and III		490

COOPERATING INSTITUTIONS

Information was secured from a total of 490 colleges or universities. Table I presents the frequencies within each of the three Groups of institutions herein studied.

The names and locations of the institutions that make up Groups I, II, and III are found as Table XV of the appendix.* Forty-four per cent of all institutions that grant degrees in the United States are included in this study. 81.0 per cent (Table II) of all the colleges and universities are training high school teachers of general academic subjects.

Seventy-eight and two-tenths per cent of Group I, 70.2 per cent of Group II, and 92.1 per cent of Group III are actively engaged in preparing high school teachers.

The state teachers colleges of the nation present the lowest percentage (70.2) of those providing secondary school teacher education curricula. This probably follows from the fact that the original normal schools were designed to work in the elementary area.

Eighty-five per cent (Table III) of all institutions are coeducational. Very nearly all of Group II fall into this classification. There are about twice as many colleges for women as there are for men. The majority of the cases accepting only one sex falls in Group III.

* See thesis on file, Library, University of Wisconsin.

TABLE II

SUMMARY OF DATA FOR INSTITUTIONS TRAINING OF TEACHERS

Totals used to compute percentages	Group I 146		Group II 170		Group III 174		Total 490	
	N	%	N	%	N	%	N	%
A. Schools that train high school teachers of general academic subjects such as English, social science, languages, mathematics, and science	114	78.2	121	70.2	162	92.1	397	81.0
B. Schools that train teachers but not teachers of general academic subjects in high school (eg. music, elementary, home economics, physical education, etc.)	16	10.9	49	29.8	6	3.4	71	14.5
C. Schools that train no teachers	16	10.9	0	0.0	5	2.9	21	4.3
D. Schools discontinued	0	0.0	0	0.0	1	0.6	1	0.2

TABLE III

STUDENT PERSONNEL

(Based on totals from Table I)

Totals used to compute percentages	Group I 146		Group II 170		Group III 174		Total 490	
	N	%	N	%	N	%	N	%
Sex:								
1. Coeducational schools	123	84.3	166	97.6	127	73.0	416	85.1
2. Schools for women	11	7.6	4	2.4	32	18.4	47	9.6
3. Schools for men	12	8.2	0	0.0	15	8.6	27	5.5
Minority Groups:								
1. Schools for colored students	19	13.0	12	7.1	2	1.2	33	6.7
2. Schools for Indian students	0	0.0	1	0.6	0	0.0	1	0.2
3. Schools for deaf students	1	0.7	0	0.0	0	0.0	1	0.2

TABLE IV

FREQUENCY OF TERM LENGTHS

Totals used to compute frequencies	Group I 146		Group II 170		Group III 173		Total 489	
	N	%	N	%	N	%	N	%
Semester	99	67.8	100	58.9	146	84.3	345	70.8
Quarter	47	32.2	70	41.1	27	15.7	144	29.2

TABLE V

DEGREES OFFERED

(The Tabulations Are Built Upon Degrees Granted to Teachers of All Levels and of All Fields of the Common Degree or Degrees Granted)

Totals used for computing percentages	Group I 146		Group II 170		Group III 172		Totals 488	
	N	%	N	%	N	%	N	%
Bachelor of Science	117	80.4	130	76.6	104	60.4	351	71.9
Bachelor of Arts	73	50.0	55	32.3	161	93.5	289	59.4
Bachelor of Education	10	6.9	22	12.9	4	2.3	36	7.4
Other undergraduate degrees	8	5.5	6	3.5	62	35.9	76	15.5
Graduate degrees	89	60.9	27	15.9	34	19.8	150	30.7

Data on the current usage of the semester of the quarter is presented as Table IV. Seven out of ten of the institutions are on the semester basis. The relatively high percentage of frequencies of the semester with Group III and of the quarter with Group II are of especial interest. Applying the chi-square of 26.46 was found. There, differences of fact and theory were significant at the one per cent level.

The Bachelor of Science and the Bachelor of Arts are the most popular undergraduate degrees. As Groups I and II seem to favor the former degree.

Sixty and nine-tenths per cent (Table V) of Group I grant graduate degrees for which teachers might qualify.

A total of 156 schools (Table XVIII—Appendix)* are granting both, the Bachelor of Science and the Bachelor of Arts, degrees to prospective teachers or as their most popular degrees. Of these, 56 or 35.8 per cent, have a language requirement to be satisfied before qualifying for the Bachelor of Arts degree.

Seventy-six institutions (Table XIX—Appendix)* are granting degrees other than the Bachelor of Science, Bachelor of Arts, or Bachelor Education to their graduates who have been trained to teach or are granted one of the more common degrees. Of this figure, 60 or 79.1 per cent, confer the Bachelor of Music to those who complete the requirements in the music curriculum.

The last item in Table V, "graduate degrees", is more specifically indicated in Table XX of the appendix. Of 149 schools that offer graduate programs leading to more popular degrees for teachers or others, there is relatively little difference in the frequencies for the Master of Science and Master of Arts degrees. The Master of Education is offered less frequently than either of those above. Forty-two schools grant the Doctor of Philosophy while 25 grant the Doctor of Education.

COURSE DESCRIPTIONS

Criteria were set forth for a semi-objective evaluation of the course descriptions found in the catalogs of the cooperating institutions. It is significant to note that only slightly more than half (Table VI) of the sets of descriptions judged were characterized as "complete".

REQUIRED PROFESSIONAL CURRICULA

The feature of greatest significance in this study is that of the required courses included in the professional curricula of the schools that train teachers to teach in high schools. As was noted in Section II, similarities and dissimilarities were observed with respect to course titles and descriptions. As a result of contact with extracts of the first 84 catalogs received it was observed that the required

* See original thesis on file, Library, University of Wisconsin.

TABLE VI

CATALOGS' COURSE DESCRIPTIONS

Totals used to compute percentages.	Group I 146		Group II 129		Group III 172		Totals 47	
	N	%	N	%	N	%	N	%
1. Judged Complete	78	53.4	75	58.1	105	61.1	258	57.7
2. Some Explanation	37	25.3	29	22.5	37	21.5	103	23.0
3. No Explanation	24	16.4	17	13.2	26	15.1	67	15.0
4. Questionnaire, only	7	4.8	8	6.2	4	2.3	19	4.3

courses' titles and accompanying descriptions fell into the following classifications: General psychology, educational psychology, adolescent psychology, mental hygiene, psychology of high school subjects, teaching, measurements and statistics, introduction to education, special methods, guidance, curriculum, principles and procedures of secondary education, general methods, philosophy of education, history of education, administration, observation, and miscellaneous.

Out of these classifications, a frequency tabulation (Table XXI) was constructed to secure a set of course titles that would be constant for this study. For example: Student Teaching is also known as Supervised Teaching, Practice Teaching, Apprentice Teaching, etc. Here, Student Teaching is the course title used to designate this type of experiences. The course titles used most frequently to represent the areas defined above were: General psychology, education psychology, psychology of adolescence, mental hygiene, student teaching, educational measurements, introduction to education, teaching of (the several subjects), guidance, secondary school curriculum, principles of secondary education, principles of teaching, philosophy of education, history of education, administration for high school teachers, observation, principles of education, and miscellaneous.

The data gathered from all 397 colleges and universities was recorded under the above headings. This information regarding the professional education work has been classified and generalized into Table VII.

Ninety-eight and two-tenths per cent (Table VII) of the institutions required Student Teaching as part of the professional curricula at the undergraduate level. The majority of the institutions in the remaining 1.8 per cent placed it in the fifth year of work.

Educational Psychology was the second most frequently required course. Group III stressed it more than Group II.

About three out of every four institutions prescribed Principles of Teaching as one of the courses for prospective high school teachers. The ratio was similar in all Groups.

The fourth ranked course was General Psychology at 65.1 per cent. Many schools considered it as a prerequisite to other education courses. Most approached it as a part of the total professional curriculum.

Teaching of (the several subjects) is required by approximately one half of the colleges and universities. Group II has a lower percentage for this course than do the other Groups.

Groups I and II more frequently prescribe Principles of Secondary Education than Group III does.

Table XXI of the appendix* presents a summary of the frequency study carried out to set up the course classifications used.

With certain exceptions to be considered in a later paragraph, Table VII includes only those courses that have a total of 14 or more appearances as required courses in the three Groups. It is interesting to note that in order of greatest frequency, the first six listed corroborate almost exactly the recommendations made by the committee working with the 1933 National Survey of Teacher Education. (80:263)

In some instances, the time spent in pursuance of a particular course in a given school was divided between two fields and so stated in the description of the course. Double entries were made in such cases in the tabulations of frequencies. The summary of such recordings in two places is shown as Table XXII of the appendix. Eighteen schools reported the combination of History and Philosophy of Education which far outranked all others.

After having seen one hundred or more course descriptions of a particular course, one gets the "feel" of the things that belong in

* See original thesis on file, Library, University of Wisconsin.

TABLE VII

SUMMARY OF REQUIRED COURSES INCLUDED IN PROFESSIONAL CURRICULA FOR TRAINING HIGH SCHOOL TEACHERS IN GENERAL ACADEMIC AREAS

Totals used to compute percentages	Group I 114		Group II 121		Group III 162		Total 397	
	N	%	N	%	N	%	N	%
1. Student teaching	109	95.7	120	99.2	161	99.5	390	98.2
2. Educational Psychology	99	86.8	93	76.8	147	90.6	339	85.4
3. Principles of Teaching	86	75.4	92	76.1	118	72.8	296	74.7
4. General Psychology	76	66.5	77	63.5	105	64.7	258	65.1
5. Teaching of the several subjects	62	54.4	44	36.4	97	59.8	203	51.2
6. Principles of Secondary Education	61	53.5	63	52.0	44	27.2	168	42.3
7. Introduction to Education	48	42.1	40	33.0	35	21.7	123	30.9
8. Educational Measurements	33	28.9	64	52.8	25	15.4	122	30.7
9. History of Education	20	17.5	39	32.2	30	18.6	89	22.4
10. Psychology of Adolescence	18	15.8	37	30.6	11	6.8	66	16.6
11. Administration for High School Teachers	15	13.1	12	9.9	33	20.3	60	15.1
12. Principles of Education	11	9.7	15	12.4	29	17.9	55	13.8
13. Philosophy of Education	16	14.0	16	13.2	19	11.7	51	12.8
14. Secondary School Curriculum	9	7.9	17	14.0	0	0.0	26	6.5
15. Observation	7	6.1	9	7.4	7	4.3	23	5.8
16. Guidance	9	7.9	7	5.8	0	0.0	16	4.0
17. Mental Hygiene	7	6.1	6	5.0	1	0.6	14	3.5

that area through close observation of the characteristics attached to it by the various colleges and universities. From inspection, then, we might set forth these course descriptions. They refer to broad aims and topics included and such administrative matters as the length of the course and the number of semester hours that the course carries. The presentation will be limited to the first five courses in order of frequency of requirement in Table VII.

1. Student Teaching—a gradual induction to teaching processes—observation participation, and full responsibility teaching including planning, carrying out the plans and evaluation — supplemented with personal investigation about the children of the group—conferences one or two days per week with the supervisors—work in the major or minor academic field—one semester—daily—five semester hours credit.
2. Educational Psychology — Educational aspects of psychology—dealing with conditions that promote or retard development of the individual and formulating certain principles which should be considered in working with children in school situations—topics: principles of learning, conditioned responses, nature and measurement of intelligence, adjustment of the individual, motivation, psychological factors to be involved in teaching children — one semester — 3 semester hours credit.
3. Principles of Teaching—deals with particular problems of organization and management of the learning situation with selection, organization, adaptation and presentation of materials of instruction test function in learning—the characteristics of the teaching situation—topics: individual differences, socialization, supervised study, measuring results, application of psychological principles in various high school subject fields, lesson planning, organization of curriculum materials—one semester—3 semester hours credit.
4. General Psychology—scientific study of the mental activities of the human organism—foundational course in the field presenting terminology, principles, and fundamental concepts — topics: memory, perception, imagination, sensation, attention, reasoning, instinct, emotion—one semester—3 semester hours credit.
5. Teaching of (the several subjects)—problems and methods in selection and organization of materials for instructional purposes in particular fields—topics: comparison and evaluation of methods, supplies, equipment, textbooks, economy of time, economy of materials,

planning for whole year, planning for the unit, planning for the day's lesson, objectives of the field, integration with other fields—one semester—2 semester hours credit.

The differences between fact and theory of the frequencies requiring each of the first thirteen entries in Table VII and those not requiring the course have been submitted to the chi-square test of independence. Nine courses differ by an amount that is statistically significant (Table VIII).

Groups I and II have representatives from all areas of the country. Because of their

TABLE VIII

SUMMARY OF CHI-SQUARE TESTS OF INDEPENDENCE AS APPLIED TO SEPARATE COURSE REQUIREMENTS AND TERM LENGTHS IN GROUPS I, II, AND III

(The course titles listed below designate the course to which the Chi-square test was applied. The null hypothesis of no relation between those schools that require the course and those that do not require the course is under test in each case.)

(There are two degrees of freedom in each instance.)

Course	X^2	p	Level of Significance	Hypothesis may be Rejected	Hypothesis seems to be Supported
1. Student Teaching	6.41	<.04	4%	x	
2. Educational Psychology	10.99	<.01	1%	x	
3. Principles of Teaching	.45	<.75	75%		x
4. General Psychology	.25	<.85	85%		x
5. Teaching of	16.00	<.01	1%	x	
6. Principles of Secondary Education	25.81	<.01	1%	x	
7. Introduction to Education	15.19	<.01	1%	x	
8. Educational Measurements	45.91	<.01	1%	x	
9. History of Education	9.68	<.01	1%	x	
10. Psychology of Adolescence	28.35	<.04	1%	x	
11. Administration of High School Teachers	6.38	<.05	5%	x	
12. Principles of Education	4.12	<.14	14%		x
13. Philosophy of Education	.35	<.85	85%		x
Term: Semester and Quarter	26.46	<.01	1%	x	

TABLE IX

SUMMARY OF CHI-SQUARE TESTS OF INDEPENDENCE AS APPLIED TO SEPARATE COURSE REQUIREMENTS OF SCHOOLS IN GROUPS I AND II

(The course titles listed below designate the course to which the Chi-square test was applied. The null hypothesis of no relation between those schools that require the course and those that do not require the course is under test in each case.)

(There is one degree of freedom in each instance.)

Course	X^2	p	Level of Significance	Hypothesis may be Rejected	Hypothesis seems to be Supported
1. Student Teaching	1.73*	<.19	19%		x
2. Educational Psychology	3.85	<.05	5%	x	
3. Principles of Teaching	.11	<.74	74%		x
4. General Psychology	.22	<.64	64%		x
5. Teaching of	7.68	<.01	1%	x	
6. Principles of Secondary Education	.05	<.82	82%		x
7. Introduction to Education	2.06	<.15	15%		x
8. Educational Measurements	15.16	<.01	1%	x	
9. History of Education	6.73	<.01	1%	x	
10. Psychology of Adolescence	7.70	<.01	1%	x	
11. Administration for High School Teachers	.61	<.43	43%		x
12. Principles of Education	.45	<.50	50%		x
13. Philosophy of Education	.03	<.86	86%		x

*Yates' correction factor employed (79:114)

TABLE X

SUMMARY OF CHI-SQUARE TESTS OF INDEPENDENCE AS APPLIED TO SEPARATE COURSE REQUIREMENTS OF GROUPS I, II, AND III WITHIN THE NORTH CENTRAL ASSOCIATION

(The course titles listed below designate the courses to which the Chi-square test was applied. The null hypothesis of no relation between those schools that require the course and those that do not require the course is under test in each case.)

(There are two degrees of freedom in each instance.)

Course	X^2	p	Level of Significance	Hypothesis may be Rejected	Hypothesis seems to be Supported
1. Student Teaching	6.08	<.05	5%	x	
2. Educational Psychology	5.15	<.08	8%		x
3. Principles of Teaching	1.66	<.45	45%		x
4. General Psychology	.52	<.74	74%		x
5. Teaching of	4.70	<.10	10%		x
6. Principles of Secondary Education	11.90	<.01	1%	x	
7. Introduction to Education	3.78	<.15	15%		x
8. Educational Measurements	36.00	<.01	1%	x	
9. History of Education	4.78	<.09	9%		x
10. Psychology of Adolescence	33.56	<.01	1%	x	
11. Administration for High School Teachers	1.68	<.44	44%		x
12. Principles of Education	1.10	<.58	58%		x
13. Philosophy of Education	.31	<.88	88%		x

TABLE XI

SUMMARY OF CHI-SQUARE TESTS OF INDEPENDENCE AS APPLIED TO SEPARATE COURSE REQUIREMENTS OF SCHOOLS IN GROUP I AND GROUP II FROM THE NEW ENGLAND, MIDDLE SOUTHERN, NORTH CENTRAL, AND NORTHWEST STATES

(There are four degrees of freedom in each instance.)

Course	X^2	p	Level of Significance	Hypothesis may be Rejected	Hypothesis seems to be Supported
Group I:					
1. Student Teaching	6.93	<.15	15%		x
2. Educational Psychology	3.03	<.55	55%		x
3. Principles of Teaching	3.65	<.46	46%		x
4. General Psychology	7.59	<.11	11%		x
5. Teaching of	2.23	<.69	69%		x
6. Principles of Secondary Education	14.35	<.01	1%	x	
Group II:					
1. Student Teaching	5.91	<.20	20%		x
2. Educational Psychology	3.33	<.45	45%		x
3. Principles of Teaching	4.58	<.35	35%		x
4. General Psychology	16.29	<.01	1%	x	
5. Teaching of	11.01	<.03	3%	x	
6. Principles of Secondary Education	14.39	<.01	1%	x	

similarity in this respect, Chi-square tests of independence were applied to the first thirteen courses for these two Groups. When the frequencies of institutions requiring each course were compared, it was found that five of the thirteen courses differ by an amount that is statistically significant.

The members of Groups I and II found in the geographical area of the North Central Association were extracted from the totals presented in Table VII. Each of the sets of subtotals were used with the totals from Group III to establish a group of relationships applying to the area described above. The Chi-square test of independence employed with those requiring the course and those not requiring the course was summarized in Table X. Assuming the 5 per cent level of significance, the least number of significant differences, 4, were found in this group of all those submitted to the test of independence. From these data it would

TABLE XII

SUMMARY OF ANALYSIS OF VARIANCE WITH USE OF "F" TEST OF SIGNIFICANCE AS APPLIED TO STUDENT TEACHING, EDUCATIONAL PSYCHOLOGY, PRINCIPLES OF TEACHING, GENERAL PSYCHOLOGY, TEACHING OF THE SEVERAL SUBJECTS, PRINCIPLES OF SECONDARY EDUCATION, AND INTRODUCTION TO EDUCATION REQUIREMENTS IN SCHOOLS OF THE NEW ENGLAND, MIDDLE, SOUTHERN, NORTH CENTRAL, AND NORTHWEST STATES

Variances Considered	F	df_1	df_2	Level of Significance	Not Significant at 5% Level
Group I:					
1. Between groups of states	2.04	24	4		x
2. Between courses	8.04	24	6	1%	
Group II:					
1. Between groups of states	2.23	24	4		x
2. Between courses	7.08	24	6	1%	

TABLE XIII

SUMMARY OF CLASSIFICATION OF REQUIRED PROFESSIONAL COURSES NOT INCLUDED IN TABLE VII

	Group I	Group II	Group III	Total	
Total used to compute percentages					397
	N	N	N	N	%
Classification of Courses:					
1. Courses in the states' school systems, school law, course of study, records, history of education, problems of education, manual, etc.	14	11	0	25	6.3
2. Integrated courses in professional education by title, description, or implication	6	12	5	23	5.8
3. Current Educational Problems, Seminar, Conference, Problems of Teaching, etc.	5	11	2	18	4.6
4. Ethics***	0	15	1	16	4.0
5. School Law***	0	15	0	15	3.8
6. Courses in visual aids***	2	13	0	15	3.8
7. Courses in psychology not previously mentioned—eg. Child Psychology, Human Growth and Development, Psychology of Reading, Abnormal Psychology, Applied Psychology, etc.	8	3	3	14	3.5
8. Educational Sociology	7	6	0	13	3.3
9. Health and Safety Education	5	0	3	8	2.0
10. Courses dealing with school and community relations	2	2	0	4	1.0
11. Courses in extra-curricular or extra-instructional activities	2	1	0	3	.8
12. Miscellaneous (not in above classifications not in Table VII (see Footnote table Table XXIII for Item 12)	6	7	2	15	3.8

***13 of the relatively large number of entries in Group II are accounted for by the State Teachers Colleges of Pennsylvania.

appear that practices among schools of this geographical area are somewhat homogeneous.

The first six courses in order of frequency listed in Table VII were studied for independence with five geographical areas of the United States in the cases of Groups I and II. Principles of Secondary Education was the only course achieving significance of independence in both Groups. (Table XI) The null hypothesis, that of no relation between those requiring and those not requiring, may be rejected for three courses in Group II. They are: General Psychology, Teaching of (the several subjects) and Principles of Secondary Education.

An analysis of variance including the "F" test was applied to the first seven courses and five geographical areas of the United States. This part of the study was limited to Groups I and II because they are nation-wide in scope. The variances between courses were found to be significant for both Groups. (Table XII). The variances between sets of states was not significant in either case.

TABLE XIV

SUMMARY OF RELATIVE FACTS TAKEN FROM THE CERTIFICATION REQUIREMENTS FOR BEGINNING HIGH SCHOOL TEACHERS IN ALL STATES AND DISTRICT OF COLUMBIA

	Number of states
Minimum pre-service college education:	
1. Requires 90 semester hours	1
2. Require baccalaureate degree or college graduation	42
3. Require masters degree or 30 semester hours of work beyond the undergraduate degree	6
Minimum number of hours in professional education:	
1. Definite statement in semester hours	45
2. Definite statement in quarter hours	2
3. Present three options for certification	1
4. Definite statement in number of clock hours	1
5. Mean number of semester hours required in professional education is 18.04.	
6. Range in number of semester hours required in professional education is from 12 to 27.	
Student Teaching:	
1. 44 states have Student Teaching required.	
2. 40 states have a specific number of hours required.	
3. Mean number of semester hours required is 4.525.	
Educational Psychology:	
1. 28 states required Educational Psychology.	
2. 21 states have a specific number of semester hours of Educational Psychology required.	
3. Mean number of semester hours of Educational Psychology required is 3.09.	
Principles of Teaching:	
1. 23 states have Principles of Teaching required.	
2. 15 states have a specific number of semester hours of Principles of Teaching required.	
3. Mean number of semester hours of Principles of Teaching required is 3.267.	
Teaching of (the several subject):	
1. 20 states required Teaching of (the several subjects).	
2. 13 states have a specific number of hours required.	
3. Mean number of semester hours is 3.00.	
Principles of Secondary Education:	
1. 9 states required Principles of Secondary Education.	
2. 4 states have a specific number of semester hours required.	
3. Mean number of semester hours required is 2.50.	
General Psychology:	
1. 7 states required general psychology.	
2. 2 states have a specific number of semester hours required.	
3. Mean number of semester hours required is 2.50.	
4. 3 states stated that General Psychology is not a part of the required courses.	
5. 2 states stated that General Psychology was a prerequisite to Educational Psychology.	
Special Requirements:	
1. 9 states have some form of special requirement.	
2. 6 states require study of the states' law, system, manual, or course of study.	
3. 3 states require satisfactory results on an examination.	
Limitation of certification requirements:	
1. 1 state excludes one of its cities and the county in which the city is located.	
2. 1 state applies the certification requirements to only the 30 state aided high schools in that state.	
3. 1 state issues a "blanket certificate for all elementary and secondary teachers".	
4. 1 state issues a certificate that "applies to all teachers".	
5. 1 state issues a certificate that is "legally valid for elementary teaching" as well as for high school teaching.	
Substitution for Student Teaching requirement:	
1. 16 states have made this provision.	
2. Range is from 4 mo. to 45 mo. of "successful teaching experience".	
3. Mean number of months of experience that can be substituted is 18.812.	

The required professional curricula in the institutions studied included: Student Teaching, Educational Psychology, Principles of Teaching, General Psychology, Teaching of (the several subjects), Principles of Secondary Education. These were the six courses that were found most frequently. Student Teaching, Educational Psychology, Teaching of (the several subjects), and Principles of Secondary Education had frequencies of requirement that were found to differ significantly between the three Groups. The Chi-square test of independence revealed that Groups I and II were unlike by significant amounts with respect to Educational Psychology and Teaching of (the several subjects). For the three Groups within the area served by the North Central Association, Student Teaching and Principles of Secondary Education had frequencies that were significantly different. By analysis of variance, it was shown that variances between courses were highly significant in Groups I and II:

As was previously indicated, the summary of information supplied in Table VII does not present all the facts regarding the frequencies of required courses in professional work. Six and three-tenths per cent (Table XIII) of all schools in the study required some study of the particular state's school law, history, course of study, etc. A few institutions (5.8 per cent) required integrated courses in education that could not be broken down into other courses found in Table VII.

Certification Requirements

The lack of uniformity among states' certification laws for the initial certificate for teaching in high schools makes it difficult to summarize all the requirements into a single form. Table XIV brings together some of the salient features pertinent to the total study. The ranking of certain professional education courses by frequency of requirement among the states is part of this table. This listing corresponds almost exactly with the first six courses required by colleges and universities. The sole difference is that general psychology is ranked sixth in certification requirements and fourth among the institutions.

Opinions of Workers in Teacher Education

It will be recalled from Section II that a questionnaire was directed to the institutions used in the study. This instrument contained six issues in the field of training high school teachers. The questionnaire sought reactions from the leader in teacher education at each school. The returns of this questionnaire illustrated the broad diversification of opinions and points of emphasis found in operation today. A summarization of these returns is presented in Table XXV.

All three Groups' representatives had the thought that integrated courses in education will become more popular. The state supported institutions said that the integrated courses should not displace the separate course work. The "liberal arts" people reported a majority for displacement. It was frequently pointed out that faculty were incapable of conducting an integrated program.

Although five years of pre-service education is a trend, the great majority of institutions had no plans in accordance. Relatively few have such programs in operation although many colleges and universities had held discussions concerning the matter. Teacher shortage was frequently mentioned as being a deterrant to action.

The three Groups were quite similar with respect to a listing of most valuable courses for beginning teachers. All ranked Student Teaching first. Groups I and III placed Educational Psychology as second, and Group II placed Principles of Teaching, here. The third in order was Principles of Teaching in Groups I and III while Group II placed Educational Psychology, here. Teaching of (the several subjects) was in fourth in the cases of Groups I and III. Human Growth and Development held fourth for Group II.

Only Group I had a majority who felt that prospective teachers should have more professional training. Many returns pointed out that we should do better what we are now doing. Some contended that a fifth year would solve the problem.

All agreed that we should have more general education in our teacher education curricula because of the great need for breadth on the part of the teacher. It was generally felt that it would be unwise to sacrifice any of the professional education program to achieve this. Some maintained that their schools had about the right balance.

Plans for improvement of student teaching included: installing internships, improving supervision, giving more time to student

teaching, wider types of experiences, closer integration with theory courses.

There was great latitude of suggestions for the improvement of teacher education for high school teachers. These were found somewhat frequently: improvement of selection program, add the fifth year, follow-up service, internships, broaden the undergraduate survey training, broaden types of experiences in student teaching.

Opinions of Widely Recognized People in Education

The tabulation of the frequency of occurrence of authors of the "Sixty Best Educational Books" during the period 1923–1945 revealed that 51 had appeared four or more times (Table XXVIII). Of these, eight were deceased, five chose to disqualify themselves, eight did not respond, and thirty wrote reactions to the issues as stated on the questionnaire. The answers to the separate questions are quoted directly. (Table XXX)

There was general agreement that integrated courses in education would grow more popular. Two spheres of integration were noted. Several mentioned the importance of developing rather close relationships between existing foundational courses in education. The second core was that of the practical applications of professional understandings with respect to the teaching of a particular subject or teaching in general. The importance of a more functional approach to the real needs of teachers was frequently cited.

Most of the institutions represented had five year curricula or were contemplating such an extension. The masters' degree was customarily granted upon the completion. Many of the states required five years of training as a condition for the life certificate. The shortage of teachers impeded the trend.

Student Teaching was ranked as the most valuable course for the beginning teacher. Other courses that were rated highly were: Educational Psychology, Social Orientation of the School, Principles of Teaching, Teaching of (the several subjects). Study of extra-curricular activities and guidance were mentioned frequently.

Opinions were somewhat evenly divided on the question of increasing the amount of professional education at the pre-service level. The advocates of such an increase wanted to introduce such things as an internship program, broader treatment of professional problems, laboratory experiences in connection with existing theory courses, and an extension to a fifth year of training. Those who did not feel that more time needed to be spent in pre-service professional education called attention to having improved programs but not increased programs, the abundance of theory without application, and the importance of the well-rounded development of the teacher. A few reported satisfactory balances between professional education and general cultural education. It was generally agreed that a reduction of the time spent on general cultural education was unwise.

The majority of those reporting favored an increase in the amount of time devoted to general cultural training. The importance of the teacher's social competence was frequently noted. Only a few suggested that some part of the professional education program be sacrificed to bring about the above increase.

A few responses indicated satisfaction with the existing student teaching program. Items for improvement that were frequently mentioned included: establishment of an internship program, extension of experiences to include extra-classroom responsibilities, better coordination with educational theory, improvement of supervision, requiring longer periods of time.

Many further suggestions were made for the improvement of teacher education for high school teachers. Some that were mentioned frequently were:

1. Development of greater social competence
2. Broadened understanding of professional living
3. Full appreciation of the obligations of the school and the teacher
4. Participation in community activities
5. More adequate selection of candidates for teacher education curricula
6. Strengthening and broadening of academic specialization areas
7. Better understanding of the real needs of high school teachers by college faculties
8. Making teacher education more functional

9. Wider use of information as to teaching efficiency
10. Establishment of follow-up and in-service training programs

Summary

In this section, we have considered the results with respect to the professional curricula required for the preparation of high school teachers. Facts about the 490 cooperating colleges and universities such as: the term length, the degrees offered, the personnel limitations, the number of schools training teachers of general academic subjects in the high schools, as well as numerous others have been presented. The facts have been shown through the use of tables which are self explanatory. We have seen the order of required courses in professional education along with the corresponding frequencies of the number of schools that require the particular course. Such statistical treatments as transfer of the frequencies to percentages of totals, tests of independence of the frequencies that require the given course and the number that do not require the course, and the analysis of variance between sets of schools and sets of courses have been applied to give a more adequate picture of the relationships involved. The results of a study of the certification requirements in professional education for the initial certificate for high school teachers have been reported. Feeling that the opinions and expressions of those working actively in the field will pretty well indicate the direction of changes, summaries of the opinions of 117 people who are in positions of responsibility in teacher training work have been presented. As another expression of opinions on issues, reactions of thirty well recognized educational writers have been summarized.

SECTION IV

SUMMARY OF FINDINGS

Although differentiated curricula for the training of high school teachers are barely more than a half century old, courses in professional education have long been required for prospective teachers of the common schools. Even before the date of the founding of the first state normal school in Massachusetts in 1839, teacher training seminaries and academies prescribed certain work in professional education. In the early days, the Theory and Art of Teaching, or an omnibus course of similar title, seems to be the only course in the field that was required in such schools. Practice in a model school was included frequently. Such courses as Study of the State School Law, School Organization and Government, and the Practice of Teaching made their way into the required curricula from this date onward until approximately 1850. During the next twenty years, History of Education, methods in the academic subjects, and Psychology were introduced to the prescribed list of subjects. In all cases, these were courses that prospective elementary school teachers studied.

Universities turned their attention to the need for the professional education of high school teachers in the latter part of the last century. The early professional curricula for the training of high school teachers was largely patterned after the type of experiences that had been provided for students in normal schools. There was one exception to this however; Student Teaching, as we know it today, was excluded. By 1890, History of Education, School Systems of the State, Philosophy of Education, Supervision, and Management of Schools, Methods of Instruction, and Psychology were rather commonly required of those who wanted to teach in the high schools. Student Teaching was prescribed in only a few instances. During the first quarter of this century, the normal schools were undergoing the transformation to teachers colleges with a general lifting of their standards to collegiate rank. This included their entry into the field of professional education for prospective high school teachers. In a limited sampling of this type of school, it was found in 1914 that the following courses were most frequently used. Practice Teaching, History of Education, Psychology, School Management, Child Study, Principles of Teaching, Educational Psychology, and Methods. A study made in 1930 of 45 state universities or corresponding institutions indicated the following courses were most frequently offered: Educational Psychology, Student Teaching, Principles of Teaching, Special Methods, Secondary Education, General Psychology, History of Education, and Introduction to Education. The National Survey of Teacher Education (1933) analyzed the prescriptions of 57 selected schools. They found the following titles, listed in order

of frequency: Educational Psychology, General Psychology, Student Teaching, General Methods, Special Methods, free electives, Secondary Education, Observation, History of Education, and Introduction to Education. In 1940, the ranking in 55 selected state teachers college was: Student Teaching, Educational Psychology, Techniques of Teaching Philosophy of Education, Introduction to Education, and Principles of Education.

The institutions included in this study, all except for one, require that students do some work in professional education. That is students take one or more courses in educational theory, educational practice, psychology, or methods courses of the type that give students insight into the problems of teaching a particular subject. The first eight most frequently required courses in order are:

1. Student Teaching
2. Educational Psychology
3. Principles of Teaching
4. General Psychology
5. Teaching of (the several subjects)
6. Principles of Secondary Education
7. Introduction to Education
8. Educational Measurements

The complete ranking for all prescribed courses is found as Tables VII and XIII.

Most schools in the study require five or six separate professional education courses. Some of the state supported teachers colleges prescribe as many as eleven or twelve courses. Many privately or church supported institutions that belong to the North Central Association require only those courses that are needed to meet the certification requirements in the particular state in which the student expects to teach.

The first five courses in the above listing are required fifty per cent or more of the time. Nine of the first thirteen required courses such as Student Teaching, Educational Psychology, Teaching of (the several subjects), Principles of Secondary Education, etc. were found to differ from expected frequencies by amounts that are statistically significant. (Table VIII). This would seem to indicate that in the cases of such courses further study of the reasons for differences in frequencies in the requirement is warranted. Part of this deviation from theory might be traced to the fact that the teachers colleges require more courses. In addition, the "liberal arts" colleges require fewer courses. In the case of Student Teaching, some variation is due to the fact that some schools requiring five years of work for the initial certificate put this course in the fifth year. In these cases, it would not appear in the tabulations which were limited to the regular undergraduate work.

In an analysis of all state supported degree granting institutions of the country (235), the Chi-square test of independence indicated five cases of significant differences from among the first thirteen required courses. Education Psychology, Teaching of (the several subjects), and Educational Measurements were among the five. The ratio of state teachers colleges that require the first two of these courses is less than the ratio among the state colleges and universities. Part of the difference with respect to the third course may be due to the fact that the teachers colleges frequently require more courses.

The colleges and universities within the geographical area served by the North Central Association were relatively homogeneous. This was true regardless of the differences in types of schools.

When one employs analysis of variance technique to determine whether or not differences are statistically significant, the differences between the first seven required courses were found to be significant (Table XII). All the state supported institutions were considered. Correspondingly, the differences between five sets of states covering the country was not significant in either type of state institution. This means that variations of the real frequencies from expected frequencies for these courses is greater than that that might be attributed to chance. The types of institutions are homogeneous with respect to their requirements.

Beyond the state certification requirements, there is little evidence of conformity on a large scale within a given state.

Student Teaching has undergone changes since its inception as teaching in the model schools in the early normal schools. The first efforts in this field were in the direction of augmenting the course in theory of teaching or "science and art of teaching". When the universities undertook the training of high school teachers, they did not prescribe it. As the normal schools entered the field of high

school teacher training, Student Teaching became more popular among all agencies engaged. It is significant to note that all schools, except for two, included in this study require this important phase of the education for teaching. Student Teaching has steadily grown in popularity of prescription among colleges and universities.

Educational Psychology ranks second when considering the frequency of required courses in education at the pre-service level. The earliest curricula of the normal schools contained a course in mental or moral philosophy. This gave way to the introduction of psychological approaches in the last quarter of the nineteenth century. In the early 1900's, generally psychology was required. At this time, a movement was afoot to break down the field of psychology into components that might be applied to various areas. Between 1910 and 1930, this division and growth in popularity had been advanced to the point where Educational Psychology was first in frequency in 1933. Since the latter date, it has been displaced by Student Teaching in rank.

Principles of Teaching has remained in the curriculum for the preparation of teachers since the days of Horace Mann. The original course that bore this title gave rise to the many subdivisions beyond Student Teaching found in our modern curricula. It has held its present rank with respect to the others since 1900.

General Psychology is used to present a background of the basic psychological understandings before the student turns his attention to the professional courses within the field of teacher training. Originally this course was the only one studied in the psychological field. The course rose to the second place in order of frequency in the 1933 study and has declined to fourth place since that time.

Teaching of (the several subjects) is probably the result of the professionalization of academic subject matter. It made its appearance under many different titles during the 1850's. Being closely connected with the work done in Student Teaching, it has come to be included in the latter or integrated with it where it does not appear as a separate course. The course was frequently found at early dates of the university's efforts in high school teacher training. At this time, the academic departments had a large part in the preparation program. Since 1910, it has pretty well maintained its present level of popularity among state colleges and universities and schools not supported by public funds. The course has declined in recent years among teachers colleges.

Principles of Secondary Education seems to serve the needs of teachers in general theory of education. It appears to have had its beginning at the time of the rise of interest in educational subject matter around the start of the century. As a course, it did not receive wide-spread acceptance into the curriculum for high school teachers until the ideal of four years of college education for these people was achieved.

History of Education was very popular in 1890 and for 25 or 30 years thereafter. Some of the subject matter of the course has been absorbed by Principles of Secondary Education. In efforts to construct curricula to fit the needs of teachers of the times, it was apparently felt that students where unready to study for maximum value History of Education to the over-all growth of the student in preparation for the first teaching position. It has fallen from first place in 1890 to eighth place today.

The findings include characteristics of the 490 colleges and universities employed in the study. This figure represents 44 per cent of the degree granting institutions of the United States. Eight of ten schools prepare teachers of general academic subjects in the high school. However, three out of ten state teachers colleges do not prepare this type of teacher. About seven-eights of the schools are coeducational. All but seven per cent admit students without respect to the minority group to which they belong. Seven out of ten schools operate on the semester plan. The ratio is lower when only state teachers colleges are considered and higher when only schools supported by non-public funds are considered. The Bachelor of Science degree seems to be the most popular undergraduate degree when the whole sample is taken into account. The Bachelor of Arts degree is granted in 93 per cent of the private and denominational colleges. In instances where both degrees are granted, most have a language prescription. Six out of ten schools of the state college or university type are granting graduate degrees for which teachers might work. The ratio is much lower in the other

two types of institutions. The Master of Arts degree seems to be the most popular degree at that level while the Doctor of Philosophy is the most frequently found at the higher level. There are 25 schools in the sample that grant the Doctor of Education degree. Although the criteria for evaluating the nature of the course descriptions found in the catalogs used for collecting the data are not infallible, only six out of ten might be judged as being "complete".

Certification Requirements

Since the foundation of the first schools in this country, there has been some sort of certifying authority in the social organization. The first teachers satisfied the ministers of the congregations as to their faith in God and some understanding of the subject matter they were to teach. Following the colonial period, local units of government set up criteria for recognition as a teacher in the public schools. These standards grew into teacher examinations covering elementary school subjects and rudiments of teaching in isolated instances. With the centralization of educational functions in a state department of education, this agency became the sole certifying authority. This is now true in every state except for two that permit certain localities to certify their own teachers. The state departments adopted the practice of examining candidates for certification and continued it until the 1890's. Thereafter, permission to teach in the high schools was more and more based upon the accumulation of college credentials in academic and professional fields. The college pre-service training has all but replaced the examination as a basis for certification of high school teachers of general academic subjects.

There is little uniformity among the states and the District of Columbia from the standpoint of professional education requirements. In order of frequency of mention of required courses in the field, the first six such courses are:

1. Student Teaching
2. Educational Psychology
3. Principles of Teaching
4. Teaching of (the several subjects)
5. Principles of Secondary Education
6. General Psychology

Upon closer examination, it is seen that this listing corresponds almost exactly with the first six courses listed as the required professional education courses of colleges and universities. The percentages of the total number of states that require a particular course is much lower than the percentage of schools that require the course. Nearly every state has its own list of recommended electives or options from which students may choose courses.

If we label the states and the District of Columbia each as units of government, 44 of the 49 units require Student Teaching. One of the remaining five units has set up four options for seeking certification. Another requires teaching experience instead of Student Teaching. Forty of the units have a definite minimum number of semester or quarter hours of required work in professional education. The mean number of semester hours required of Student Teaching is 4.5. Approximately one-third of the units give those who seek to be certified the opportunity to substitute a certain amount of "successful teaching experience". Expressed in months, the range of such substitution is unusually wide. The range is four to forty-five months with a mean of 18.8 months.

In the history of teacher certification for high school teachers, there was a transition from certification by examination to the licensing on the basis of college credentials. One of the primary features of this movement has been the goal of a four year college education as the minimum for every high school teacher. Only one state issues an initial certificate to teach in high schools with less than four years of pre-service work of collegiate grade. Many states issued temporary certificates during the war years in order to staff their schools, but these instances are not thought of as being "regular" certificates. Six units are asking those who expect to teach in the high schools to complete 30 semester hours of advanced work or the masters degree beyond the baccalaureate degree. Two more states are contemplating the move toward more pre-service training than the standard four years.

Most units of government are specific in that the pre-service preparation must be done in an institution of collegiate rank. Further, this school should hold recognition for its work in the training of teachers from some

approving agency. This may be a regional accrediting association or the state department of education.

Forty-eight of the 49 units present a requirement in terms of the total number if semester, quarter, or clock hours of professional education for certification. The single exception has set up four options for certification. The range of semester hours required for certification in education work is from 12 to 27. The mean number of semester hours is 18. This wide range is typical of many other points of current certification laws.

Some units have special requirements that are quite unlike those found in other cases. There are six that ask the candidate to prepare himself in the particular states' laws, school system or manual or course of study. Three units make certification provisional upon the satisfactory results of an examination in health, methods, content or the National Teacher Examination.

There was time in most states when a certificate to teach issued by the state department of education was valid to teach at any level in any of the schools of the state. At present, there are only three units that issue such "blanket" certificates. There are two states where certificates issued by the state department are not valid in certain areas of those same states.

Such exceptions as special requirements, "blanket certification", and limits of acceptance are clearly in the minority at the present time.

Opinions of Teacher Education Workers and People of Outstanding Reputation in Education

Opinions of educational workers and leaders were polled for the purpose of giving more meaning to statements of current practices and indicating the directions in which teacher education is likely to move. Representatives of the institutions employed in the first phase of the study made up one group of responses to some fundamental issues confronting teacher education. A second group was composed of people who have gained outstanding reputations in the educational field.

The reactions on the instrument used to poll the opinions of people in the field were exceedingly varied. This characteristic extended to randomness of the sample. Every area of the country was represented. The heaviest response came from the central part of the nation due to the fact that all of the private and denominational institutions were drawn from this area. Practically every type and size of institution were represented. The group of people who have gained wide recognition included representatives of nearly all aspects of education. In the main, the reactions of the "experts" coincided with the reactions of the active workers in teacher education.

The six issues raised were: integrated courses in professional education, five year program of pre-service work, listing of courses from the professional education curricula in order of value to the beginning teacher, increase of professional education, increase of general cultural education, and improvement of Student Teaching. A seventh question posed the problem of future improvements for the whole field of teacher education. The responses may be summarized as follows:

1. There is a strong feeling that integrated courses in education will grow more popular. They should not entirely displace the separate course work.

2. Relatively few institutions have the five year programs for the preparation of high school teachers in operation. There is a leaning toward this as an ideal.

3. Student Teaching was ranked first in terms of value to the beginning teacher. Educational Psychology, Principles of Teaching, and Teaching of (the several subjects) had high frequencies of mention.

4. Opinion is evenly divided on the matter of increasing the amount of professional education in the pre-service training. There is opposition to reducing the amount of general cultural training to achieve such an increase. Many of the proponents of increasing the professional education advocated the extension to a five year program.

5. There is marked feeling that the general cultural training should be increased. Such an increase should not be made at the expense of professional education.

6. There is genuine concern as to the improvement of Student Teaching through such means as:

   a. improving the supervision of work
   b. extension to off-campus work
   c. setting up internships

d. giving more of the student's time and credit to Student Teaching
e. integrating theory of professional education with the practical work
f. extending experiences to include contacts in extra-curricular work and community study

7. There was an exceedingly wide latitude of suggestions for the improvement of the whole field of teacher education. In spite of this, there were many who were concerned with similar approaches.

a. improving the selection of students to enter the program of teacher training
b. establishing internship type of work
c. broadening the undergraduate survey training through wider contact with academic fields
d. less specialization within academic fields
e. instituting a follow-up service
f. the improvements upon Student Teaching mentioned above

The above summary presents the central tendency of the opinions with respect to the issues raised. It might be well to consider the arguments on both sides of the above questions as brought out by the implications of the reactions to the items.

I. Integrated courses in education

a. Arguments for:

1. A unified whole program would achieve the ends of teacher training because it would be more functional.
2. Integrated courses would enable and promote the consideration of essential aspects of the preparation as parts of the whole teaching position. This emphasizes the point that the entire teaching situation is of the greatest significance. Teachers do a whole complex job which cannot be approached as a series of isolated learnings.

b. Arguments against:

1. Such administrative matters as the incapability of the faculty to handle this type of work, schedule difficulties, school administration indifference, and present certification requirements oppose the move in the direction of integrated courses.
2. Integration is impractical if we try to compose an entire curriculum of integrated courses in education because there are some courses that must be kept independent. Integration, then, might be carried out with limits to certain areas.
3. Many have tried integrated courses in their professional curricula or have observed the trials of others and are not satisfied that integrated courses are wholly successful.

II. Five year program

a. Arguments for:

1. Teaching is such a complex activity that more time is required to prepare teachers at the pre-service level than is now afforded.
2. Modern society expects more of its teachers in the way of professional competencies, academic background and general education.
3. The competition for the available teaching jobs will be so great as to demand additional pre-service training as a selective factor and as a measure of increased quality of credentials.
4. Standards are being raised for teacher certification as the result of pressures of public school systems, state departments of education, and people in the field.

b. Arguments against:

1. Present shortages of teachers in most areas, the low salaries paid to teachers, and social prejudices prevent raising the minimum pre-service level of residence study.
2. Some centers have put the increase beyond the ordinary four years into practice and found that the fifth year is most profitable as a type of in-service training rather than pre-service.
3. Some schools are not equipped in staff, library, and other facilities to offer the additional work.

III. Most significant courses:

There is considerable evidence that the curriculum for the preparation of high school teachers of general academic subjects should be of the type that puts the stress on the

essentials that the teacher must know and be able to do while at work. In a sense, the practical courses are felt to be of greater value than the general theory courses.

IV. Increased professional education:

a. Arguments for:
   1. The courses that the prospective teacher takes should fit the teacher for his job.

b. Arguments against:
   1. All the separate courses in education needed to prepare teachers are now included in the curricula, but they need revitalization in terms of the needs of the teachers, themselves.
   2. The accumulation of credits in professional education does not necessarily determine the success of the teacher.

V. Increase of general cultural education:

a. Arguments for:
   1. Generally, the teachers of our high schools are not well rounded individuals, and more general education should contribute to this circumstance to improve it.
   2. Teaching ought to be enriched beyond the mere dissemination of facts in the subject matter field.
   3. For higher quality teaching, it is essential that the teacher bring his whole self to his work which implies that he should be more than a master of content and professional practices.

b. Arguments against:
   1. Too frequently, increase of general education implies the addition of more specialized academic courses.

VI. Student Teaching:

There is real interest in improving the entire service through means as discussed above. Attempts are sincere in the direction of approaching the real teaching situation in all of its aspects for those who expect to teach.

VII. General suggestions:

1. The breadth and point of emphasis of suggestions and recommendations for the improvement of teacher education is exceedingly wide.
2. There is real concern in the direction of revitalization of the entire curriculum for the preparation of teachers including the professional, academic and general phases.
3. Efforts are being made to improve such administrative aspects of teacher education as the quality of the academic and professional faculty, certification requirements, the five year program, the placement service, and the selection of candidates for teacher training.
4. In-service contacts and preparation appear to be growing in popularity.
5. There seems to be a general lifting of standards of and for teaching and teachers.

There were three points of rather noticeable controversy in the above set of issues. Should the amount of professional education now included in professional curricula be increased, left at present amounts, or be decreased? Should the terminal residence requirements stand at four years or increase to five years? Should the present professional curriculum stand in the form of separate courses, placed in fewer integrated courses, or be approached as a mixture of the two?

SECTION V

SUMMARY, TRENDS, RECOMMENDATIONS, AND IMPLICATIONS

Points of Generalization From the Three Phases of This Study and Their Relationships to Other Studies

Similarity may be noted with respect to various statements of required professional curricula for the pre-service training of high school teachers. The analysis of practices in colleges and universities revealed that the six courses most frequently required were:

1. Student Teaching
2. Educational Psychology
3. Principles of Teaching
4. General Psychology
5. Teaching of (the various subjects)
6. Principles of Secondary Education

The courses most frequently prescribed by states' certification laws for the initial high school teaching certificate are identical with the above list. Further, the ranking is the same with one exception. General Psychology

is ranked sixth in the summary of requirements for certification. This would seem to indicate that there is considerable uniformity between the practices of institutions and certifying authorities. The ranking of opinions of workers in teacher education and people of outstanding reputation in education with respect to most valuable courses for the beginning teacher produces a list of courses that very nearly coincides with the above set. There is agreement between the practices of schools and certifying agencies and the opinions of leaders in the field. The first six required courses found by the National Survey of Teacher Education (1933) were the same as the above listing with one exception. At that time, History of Education was in sixth place. Principles of Secondary Education did not appear in the group of six. Since that time, Student Teaching moved from fourth place to first, and Principles of Teaching moved from fifth to third. General Psychology has dropped from second to fourth, and Teaching of (the several subjects) has gone from third to fifth. Current practices coincide with the Survey's recommendation of a list of courses to be prescribed at the pre-service level. The list of required courses of the present is similar to the proposal of the Commission of Teacher Education (1944). They placed greater emphasis upon child study and community understanding than is apparent in the summary of current practices. They would maintain the content of present courses but change the basis of organization such that the titles would disappear. Principles of Teaching and Student Teaching would be retained as separate courses.

Student Teaching is the most frequently prescribed course among colleges and universities. It ranks first among those courses required by certifying authorities. Leaders in the field feel that Student Teaching is the most valuable course to the beginning teacher. The course has grown steadily in popularity since the beginning of the century. Both, the National Survey on Teacher Education and the Commission on Teacher Education, stressed the importance of actual practice of theory in real situations. Modern writers no longer challenge its presence in the curriculum. Instead, their attention is devoted to the improvement of the experiences. Currently, emphasis is directed toward securing closer integration between Student Teaching and other courses in the curriculum.

The professional needs of all teachers is a point of common emphasis. Institutions tend to prescribe those courses that deal with the realities of teaching. Certification requirements are quite specific in holding candidates responsible for an understanding of the aspects of the teaching position. Leaders in the field are interested in helping students to be good teachers although the opinions as to method for achieving the objective vary. The National Survey of Teacher Education (1933) advocated the type of curriculum that would produce skilled professional people as well as well rounded men and women. The Commission on Teacher Education recognized that thorough mastery of fundamental professional attributes was of great importance.

There is general appreciation of the fact that the training of teachers is not concluded with the graduation of the student from the pre-service curriculum. Colleges' curricula are designed to meet the exigencies of the first teaching year. Many are instituting a follow-up service to continue to help their graduates to grow professionally. Most of the larger units have had graduate study programs for many years to facilitate further mastery. The majority of states have made provisions for expected improvement in teaching through means of advanced certificates beyond the initial one. Workers and writers in the field of education strongly advocate the establishment of sound in-service programs to achieve continuous growth.

There is considerable diversity of practices, terminolgy and opinions in professional education. Some colleges' curricula are well conceived toward the aim of the good teacher. Others are determined wholly by the terms of the state's certification law with little thorough planning beyond the selection of textbooks to be employed in the courses. Some curricula are composed of eleven or twelve separate courses while others have been reduced to three or four. The same courses may be evaluated at two credits in one institution and six credits in another. The same course may have many different titles. Certification requirements vary greatly. One state may require twelve semester hours of professional education whereas another state requires twenty-four. One state requires five years of pre-service education and another re-

quires only three. Some states are quite specific in the courses to be presented by the candidate while others allow him to make a selection from a broad list of possible choices. The terminology is widely varied. The opinions of educational workers differ greatly with respect to methods for producing a good teacher at the end of the pre-service period. There are those who feel that the integrated program of learnings is the only program. A number strongly support the separate course idea. Points of view vary considerably as to the merits of the theoretical courses or the practical courses. Some people would place the professional education work as the core around which the other phases of teacher education should be built. A few would like to see professional education reduced sharply in curricula. There are those who defend on-campus training schools and those who oppose them. General education for teachers means different things to different people.

There has been a change in notions as to most valuable courses in the professional curricula over the last 40 years. In 1903, heads of departments of education in twenty universities ranked these courses as: History of Education, Educational Psychology, General Method, and Theory of Education. At the present time, the consensus of opinion on this matter lists these courses: Student Teaching, Educational Psychology, Principles of Teaching, and Teaching of (the several subjects). The second and third courses are the same, even to order. The first and fourth courses of the 1903 listing have been replaced by two courses that are commonly thought of as being of a practical nature.

Trends

There are several trends in professional education curricula for the training of high school teachers. Analyses of practices of colleges and universities, certification requirements, and opinions of leaders in the field seem to indicate the following:

1. There has been a continuous differentiation of the subject matter of professional education into more and more separate courses since universities began to prepare high school teachers. The courses seem to be the result of increasingly careful study of the teacher's job, the nature of learning and teaching, and the nature and needs of the child.

2. In recent years, there is increased interest in placing the significant topics of professional education into three or four large area courses. Through these, the whole complex act of teaching may be considered with reference to all the factors involved in teaching.

3. There is marked movement toward increased quantity of pre-service education. This includes academic, general, and professional types of training.

4. There has been growing concern for broadening the base of professional education for high school teachers in order to make them better qualified to teach in the modern high school of smaller communities.

5. Increased emphasis is being placed upon the development of professional competency of the prospective beginning teacher.

6. There is increasing appreciation of the fact that learning to teach is a continuous process which must extend into the in-service period. Teacher training institutions are devoting more and more attention to this type of training.

7. There has been a steady growth of popularity and emphasis on Student Teaching and actual classroom observation among institutions training high school teachers. Theory of teaching and education are coming to be more closely integrated with Student Teaching.

8. There is increased appreciation of the importance of personality improvement for the undergraduate. The teacher brings his whole being to his work, and he works as a whole person instead of a combination of academic, general, and professional segments.

9. Currently, the trend seems to be to improve curricula rather than extend them in terms of college credits.

Recommendations

Certain suggestions might be made toward the general improvement of teacher education as applied to the pre-service preparation of high school teachers. These recommendations are based upon the evidence that has been presented throughout the study.

1. There is need in setting up curricula for the education of teachers to study the needs of teachers in the high schools. Such study should center upon the general and specific competencies that teachers need to carry on their work. Greater emphasis ought to be

placed upon the needs of teachers in the particular region which the institution serves.

2. There should be greater cross-fertilization of ideas between staff members, between departments, between institutions, between states, between regions, and between nations. The examination of the idea of others should breathe new life into the curriculum.

3. Since it is a general judgment that students grow more effectively when they have had a part in curriculum planning, they should have such opportunities. Encourage them to analyze existing conditions and their own potentialities to the end of an improved teacher education curriculum. Authority and representation in voice ought to accompany responsibility.

4. The curriculum should be so constructed as to meet the teacher's needs in art and science of teaching. The majority of schools could well achieve the goal of a functional teacher education curriculum through making essential changes in the existing curriculum.

5. The quantity and quality of general cultural education such as produces well rounded men and women should be increased for the enhanced values to the children with whom the teacher works. The general education aspects of the professional and academic education should be exploited.

6. Student Teaching is felt to be the most valuable single course in the present professional education offerings when given under appropriate conditions and integrated with theory. The experiences commonly found in this course should be extended to include teaching in real circumstances. This implies opportunities in extra-classroom learnings such as extra-curricular duties, community activities, administrative relationships, counselling, and faculty teamwork. Further, it is implied that perfect coordination of theory, the best of supervision, and the clearest understanding of objectives will prevail in such a program.

7. The unification of all teacher education aspects of institutions is advocated. Students will be more conscious of their entry into a profession if existing departmental barriers are broken down. This is consistent with our modern emphasis upon the teacher as being a whole person.

8. Since there is common feeling that part of existing courses are non-essential, let us in teacher education admit that there is some wasted time in some of the professional education courses. If the topic is important, it should be considered at such length as will produce mastery. If it is irrelevant, it should be deleted from the program.

9. The consensus of opinion among teacher education leaders is that fifteen to twenty semester hours of professional education is adequate at the pre-service level. It follows that this phase of the total program must be exceedingly well planned in order to make every moment of highest significance.

10. Inasmuch as teacher education is emphasizing a thorough foundation in the work of the teacher, college personnel engaged in teacher education should at all times be thoroughly familiar with the problems of the modern high school teacher.

11. At such time as present shortages are alleviated, it would seem advisable to extend our minimum formal education requirements for permanent certification to five years of collegiate work. The fifth year may be of either the pre-service or in-service type. Although formal education does not make the teacher, necessarily, it serves to provide greater breadth of background. Additional experiences with experts should enable the teacher to better understand the children with whom he works toward the development of each child to his full capacity.

12. Although there are many weaknesses in absolute uniformity, some effort should be directed toward minimal standardization of certification requirements, course titles, professional education for the several states.

13. Agencies in teacher education need to constantly evaluate and re-evaluate their efforts to produce well qualified teachers. Conditions in the social sciences including education, change so rapidly that without such vigilance, programs might soon come to be ineffective.

14. Scientific method needs to be applied to teacher education to a greater extent. Changes in curricula should be based upon tested hypotheses rather than the desires of some one individual. Much of the professional education of high school teachers is yet a frontier for research workers.

Suggestions for Further Research

The study here reported has brought to light a number of problems in the area of teacher education that would merit investigation.

1. A true picture of the required curricula for the pre-service training of high school teachers in terms of specific experiences for students ought to be made. Such a study must include a detailed analysis of at least the most frequently required courses. Items for consideration within each course might include topics covered, time spent, type of experiences, and other pertinent aspects. The author of this study intends to carry on his work in this direction.

2. It would seem reasonable to repeat this study periodically to observe the changes that have taken place and to check trends in teacher education.

3. Studies might very profitably be made of the academic requirements for certification. One phase of the investigation might well deal with the correlation of such requirements with actual need for such learnings on the part of high school teachers.

4. From time to time, several studies have been made of the Student Teaching opportunities and experiences as provided by selected groups of schools. The course seems to be changing annually in some way in various schools. The status throughout the country might well be determined. Important trends from observations should be reported for the benefit of all teacher training institutions.

5. The experiences of such states as California, Oregon and Washington in the matter of five years of pre-service education for high school teachers of general academic subjects ought to be analyzed in detail for the profit of other states who are contemplating the move in that direction.

6. A number of excellent studies have been made as to the qualities essential for highest teaching efficiency. Such studies need to be continued and their scope made more inclusive.

7. A technique for selection of candidates for teacher training curricula ought to be evolved that would bring the right people into the profession.

8. The teaching job analyses are now well out of date. If teacher education curricula are to be planned in accordance with the real needs of teachers, the profession has great need for knowledge as what the job of the teacher actually is.

9. Better evaluation instruments and techniques need to be developed in order to more adequately check student growth toward the goal of the high school teacher.

10. New hypotheses in teacher education need experimental verification. Much more creativeness is necessary at all points.

Bibliography

1. Agnew, Walter D. *The Administration of Professional Schools for Teachers,* (Baltimore: Warwick and York Inc., 1924).
2. Armstrong, W. Earl, Hollis, Ernest V., and Davis, Helen E. *The College and Teacher Education,* (Washington: American Council on Teacher Education, 1944).
3. Atkinson, F. W. *The Professional Preparation of Secondary Teachers in the United States,* (Leipzig, Germany: Breitkopf and Haertel, 1893).
4. Bachman, Frank P. *Training and Certification of High School Teachers,* Field Studies No. 2, Division of Surveys and Field Studies, (Nashville, Tenn.: George Peabody College for Teachers, 1930).
5. Ballou, Willard Alger. *A Comparative Study of State Teachers College Faculties and Liberal Arts College Faculties,* Doctor's Thesis, (Philadelphia: University of Pennsylvania, 1933).
6. Barnard, Henry. *American Journal of Education,* XVI, (1886).
7. Barnard, Henry. *Normal Schools,* Volumes I and II, (Hartford, Conn.: Case Tiffany Co., 1851).
8. Barr, A. S. and Others. *The Measurement of Teaching Ability,* (Madison, Wis.: Dembar Publications Inc., 1945).
9. Bennington Planning Conference for the Cooperative Study of Teacher Education, *Reports and Addresses—August 21 to September 1, 1939,* (Washington: Commission on Teacher Education of the American Council on Education, 1939).
10. Benson, Charles E. *The Output of Professional Schools for Teachers,* (Baltimore: Warwick and York, Inc., 1922).
11. Briggs, Eugene S. *The Preparation of Secondary Teachers in Teachers Colleges for Guiding and Directing Extra-Class Activities,* Doctor's Thesis, (Jefferson City, Mo.: State Department of Education, 1935).
12. Byram, Harold Moore. *Some Problems in the Provision of Professional Education for College Teachers,* Doctor's Thesis,

(New York: Bureau of Publications, Teachers College, Columbia University, 1933).

13. Chandler, Paul G. *Some Methods of Teaching in Six Representative State Teachers Colleges of the United States,* Doctor's Thesis, (New York: Bureau of Publications, Teachers College, Columbia University, 1930).
14. Cochran, W. J. "Analysis of Variance with Experimental Errors Follow the Poisson or Poisson or Binomial Laws", *Annals of Mathematical Statistics,* XI, (September, 1940) pp. 335–342.
15. Colson, Edna Meade. *An Analysis of the Specific References to Negroes in Selected Curricula for the Education of Teachers,* Doctor's Thesis, (New York: Bureau of Publications, Teachers College, Columbia University, 1940).
16. Commission on Teacher Education. *Cultural and Social Elements in the Education of Teachers,* (Washington: American Council on Education, 1940).
17. Commission on Teacher Education. *The Improvement of Teacher Education,* (Washington, D. C.: American Council on Education, 1946).
18. Commission on Teacher Education. *Teachers for Our Times,* (Washington, D. C.: American Council on Education, 1944).
19. Cooper, Russell M. *Better Colleges—Better Teachers,* prepared for the North Central Association Committee on the Preparation of High School Teachers in Colleges of Liberal Arts, (Chicago: Macmillan Co., 1944).
20. Council on Cooperation in Teacher Education. *Report,* (Washington: American Council on Education, 1943).
21. Cubberley, Elwood P. *Public Education in the United States,* (Chicago: Houghton Mifflin Co., 1934).
22. Cubberley, Elwood P. *Public School Administration,* (Cambridge, Mass.: Houghton Mifflin Co., 1921).
23. Cubberley, Elwood P. *Readings in the History of Education,* (Chicago: Houghton Mifflin Co., 1920).
24. Curriculum Committee of the School of Education, Syracuse University. "A Functional Program of Teacher Education", (Washington: American Council on Education, 1941).
25. Curtiss, J. H. "On Transformations Used in Analysis of Transformation", Annals of Mathematical Statistics, XIV, (June, 1943), pp. 107–122.
26. Deyoe, George P. *Certain Trends in Curriculum Practices and Policies in State Normal Schools and Teachers Colleges,* Doctor's Thesis, (New York: Bureau of Publications, Teachers College, Columbia University, 1934).
27. DeYoung, Chris A. *Introduction to American Public Education,* (New York: McGraw–Hill Book Co., 1942).
28. Douglass, Harl R. *Pre-service Patterns of Teacher Education,* an address to the Bennington Planning Conference, (Washington: Commission on Teacher Education of the American Council on Education, 1939).
29. Douglass, Harl R. and Mills H. H. "Teacher Education in the Post-war Period", *Educational Administration and Supervision,* XXIX, pp. 526–534.
30. Eby, Frederick and Arrowood, Charles Flinn. *The Development of Modern Education,* (New York: Prentice Hall Inc., 1945).
31. Edmiston, Vivian. "Evaluating the Integrated Professional Curriculum at Milwaukee State Teachers College", *Educational Administration and Supervison,* XXX, pp. 17–31.
32. Emans, Lester M. *Analysis of Teacher Rating Scales,* Master's Thesis, Madison, Wisconsin University of Wisconsin, 1929.
33. Evenden, E. S. *National Survey of the Education of Teachers*—Volume VI, U. S. Office of Education Bulletin, 1933, No. 10, (Washington: U. S. Government Printing Office, 1933).
34. Evenden, Edward S. *Teacher Education in a Democracy at War,* (Washington: American Council on Education, 1942).
35. Evenden, E. S. and Butts, R. Freeman. *Columbia University Cooperative Program for The Pre-Service Education of Teachers,* (New York: Bureau of Publications, Teachers College, Columbia University, 1942).
36. Flowers, John Garland. *Content of Student Teaching Courses Designed for The Training of Secondary Teachers in State Teachers Colleges,* Doctor's Thesis, (New York: Bureau of Publications, Teachers College, Columbia University, 1932).

37. Frazier, Benjamin W. "Meeting The Teacher Shortage Problem", *Teacher Educational Journal*, V, (June, 1943), pp. 15–20.

38. Frazier, Benjamin W. *National Survey of The Education of Teachers*, Volume V, U. S. Office of Education, Bulletin 1933, No. 10, (Washington: U. S. Printing Office, 1933).

39. Garrison, Noble Lee. "Integration in Teacher Education", *The Teachers College Journal*, X, (March, 1939), pp. 73–79.

40. Good, Carter V. *A Guide to Colleges, Universities and Professional Schools in The United States*, (Washington, D. C.: American Council on Education, 1945).

41. Good, Carter V., Barr, A. S., and Scates, Douglas E. *The Methodology of Educational Research*, (New York: D. Appleton–Century Co., 1938), pp. xxi and 890.

42. Goody, John P. *Rise and Growth of The Normal School Idea in The United States*, Circulars of Information, No. 8, 1891, (Washington: U. S. Bureau of Education, 1891).

43. Gray, Thomas J. *Methods of Instruction and Courses of Study in Normal Schools*, prepared for the National Education Association by the "Chicago Committee", (Syracuse: C. W. Barden, 1889).

44. Hager, Walter E. "Adjustments in Teacher Education Curricula to Meet War Demands", *Teacher Education Journal*, V, (June, 1943), pp. 3–6.

45. Hall–Quest, Alfred Lawrence. *Professional Secondary Education in Teachers College*, Doctor's Thesis, (New York: Teachers College, Columbia University, 1925).

46. Harper, Charles A. *A Century of Public Teacher Education*, (Washington: Hugh Birch–Horace Mann Fund for the American Association of Teachers Colleges, 1939).

47. Harper, Charles A. *Development of the Teachers College in The United States*, (Bloomington, Ill.: McKnight and McKnight, 1935).

48. Hodgman, Charles D. *Mathematical Tables from Handbook of Chemistry and Physics*, (Cleveland: Chemical Rubber Publishing Co., 1941), pp. vi and 354.

49. Hunt, Charles W. "Criteria for Teacher Education", *Teacher Education Journal*, IV, (March, 1943), pp. 159–161.

50. Joint Committee of The Faculty of Harvard College and of The Graduate School of Education, *The Training of Secondary School Tteachers*, (Cambridge, Mass.: Harvard University Press, 1942).

51. Joint Committee of The National Education Association and The American Library Association. "Sixty Best Educational Books", *Journal of The National Education Association*, 1923 through 1946.

52. Jones, Lance G. E. *The Training of Teachers*, (London: Oxford University Press, 1924).

53. Judd, Charles H. *Problems of Education in The United States*, (New York: McGraw–Hill Book Co., 1933).

54. Kandel, Isaac L. *History of Secondary Education*, (Cambridge, Mass.: Houghton Mifflin Co., 1930), pp. xvii and 571.

55. Kandel, Isaac L. *Twenty Five Years of American Education*, (New York: The Macmillan Co., 1924).

56. Knight, Edgar W. *Education in The United States*, (Chicago: Ginn and Co., 1934).

57. Lee, Edwin Augustus. *The Development of Professional Program in Education*, Doctor's Thesis, (New York: Columbia University, 1925).

58. Lindquist, E. F. *Statistical Analysis in Educational Research*, (Chicago: Houghton Mifflin Co., 1940), pp. xiii and 266.

59. Low, Camilla A. "*Recent Changes in Teacher Education*", *Teacher Education Journal*, V, (June, 1943), pp. 13–14.

60. Luckey, G. W. A. *The Professional Training of Secondary Teachers*, Doctor's Thesis, (New York: Columbia University, 1903).

61. Manguin, Vernon LaMar. *The American Normal School*, Doctor's Thesis, (Baltimore: Warwick and York Inc., 1928).

62. McAllister, Janet. "A Teachers College Studies Its Curriculum", *Educational Administration and Supervision*, XXX, pp. 165–174.

63. Mead, Arthur Raymond. *Supervised Student Teaching*, (Chicago: Johnson Publishing Company, 1930).

64. Melvin, A. Gordon. "The Form of Teacher Education for Modern Schools", *Teacher Education Journal*, V, (March, 1944), pp. 138–142.

65. Members in the Staff in Education, Cornell University, "The Five-Year Program for The Preparation of Secondary-school Teachers at Cornell University", *Educational Administration and Supervision*, XXIX, pp. 385–400.

66. Meriam, Junius Lathrop. *Normal School Education and Efficiency in Teaching*, Doctor's Thesis, (New York: Columbia University, 1905).

67. Monroe, Paul. *Founding of The American Public School System*, (New York: Macmillan Company, 1940).

68. Mulhern, James. *A History of Education*, (New York: The Ronald Press Co., 1946), pp. xii and 421.

69. Norton, Arthur O. "The First State Normal School in America—The Journals of Cyrus Pierce and Mary Swift", (Cambridge, Mass.: Harvard University Press, 1926).

70. Ortman, E. J. "Seeking a Better Professional Curriculum for Teachers", *Educational Administration and Supervision*, XXX, pp. 349–60.

71. Pangburn, Jessie M. *The Evolution of The American Teachers College*, Doctor's Thesis, (New York: Bureau of Publications, Teachers College, Columbia University, 1932).

72. Peters, Charles C. and Van Voorhees, Walter R. *Statistical Procedures and Their Mathematical Bases*, (New York: McGraw-Hill Book Co., Inc., 1940), pp. xiii and 516.

73. Peterson, Francis Edwin. *Philosophies of Education Current in The Preparation of Teachers in The United States*, (New York: Bureau of Publications, Teachers College, Columbia University, 1933).

74. Prall, Charles E. *State Programs for The Improvement of Teacher Education*, (Washington: Commission on Teacher Education of The American Council on Education, 1946).

75. Prall, Charles E. and Cushman, C. Leslie. *Teacher Education in Service*, (Washington: American Council on Education, 1944).

76. Presidents of Eastern States Association of Professional Schools for Teachers, *Problems in Teacher Training*, Volumes I through XIII, (Newburgh, N. Y.: Eastern States Association of Professional Schools for Teachers, 1926 through 1938).

77. Randolph, Edgar Dunnington. *The Professional Treatment of Subject Matter*, (Baltimore: Warwick and York Inc., 1924).

78. Reisner, Edward H. *Nationalism and Education Since 1789*, (New York: The Macmillan Company, 1922).

79. Rider, Paul R. *An Introduction to Modern Statistical Methods*, (New York: John Wiley and Sons Inc., 1939), pp. ix and 220.

80. Rugg, Earle U. and Others. *National Survey of The Education Teachers—Volume III*, U. S. Office of Education Bulletin, 1933, No. 10, (Washington: U. S. Government Printing Office, 1933).

81. Russell, John Dale and Judd, Charles H. *The American Educational System*, (Chicago: Houghton Mifflin Co., 1940).

82. Sheldon, H. D. *State Normal School Systems of The United States*, (Eugene, Ore.: University of Oregon, 1905).

83. Sprague, Harr A. *A Decade of Progress in The Preparation of Secondary School Teachers*, Doctor's Thesis, (New York: Bureau of Publications, Teachers College, Columbia University, 1940).

84. *Circular and Catalog*, State Normal School, (Westfield, Mass., 1847 and 1867).

85. Thompson, Glenn S. "The Development of An Internship Program", *Teacher Education Journal*, IV, (September, 1942), pp. 57–63.

86. Troyer, Maurice E. and Pace, C. Robert. *Evaluation in Teacher Education*, (Washington: American Council on Education, 1944).

87. U. S. Office of Education. *Statistics of The School Systems—1929–30*, (Washington: U. S. Government Printing Office, 1930).

88. *Calendar* (Ann Arbor, Michigan: University of Michigan, 1889).

89. Watson, Goodwin, Cottrell, Donald P., and Lloyd–Jones, Esther M. *Redirecting Teacher Education,* (New York: Bureau of Publications, Teachers College, Columbia University, 1938).
90. Wickersham, James P. *A History of Education in Pennsylvania,* (Lancaster, Pa.: Inquirer Publishing Co., 1886).
91. Williamson, Abed Jalmer. *Provisions for General Theory Courses in The Professional Education of Teachers,* Doctor's Thesis, (New York: Bureau of Publications, Teachers College, Columbia University, 1936).
92. Waellner, Robert C. and Wood, M. Aurilla. *Requirements for Certification of Teachers and Administration—for Elementary Schools, Secondary Schools, Junior Colleges—1945–46,* (Chicago, Ill.: University of Chicago Press, 1945).

Of Journal of Experimental Education published quarterly at Madison, Wisconsin for September 1947.

State of Wisconsin—County of Dane—ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Walter A. Frautschi, who, having been duly sworn according to law, deposes and says that he is the business manager of the Journal of Experimental Education and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Dembar Publications, Inc., Madison, Wisconsin; Editor, A. S. Barr, Madison, Wisconsin; Managing Editor, A. S. Barr, Madison, Wisconsin; Business Manager, Walter A. Frautschi, Madison, Wisconsin.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) Dembar Publications, Inc., 114 S. Carroll St., Madison, Wisconsin; A. S. Barr, Madison, Wisconsin; F. S. Brandenburg, Madison, Wisconsin; Walter A. Frautschi, Madison, Wisconsin.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) There are none.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is 525.

WALTER A. FRAUTSCHI.
(Signature of business manager.)

Sworn to and subscribed before me this 18th day of September 1947.

MILDRED L. NELSON.
(My commission expires December 22, 1950)